THE LANCET.

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Arris and Gale Lecture

ON

THE PATHOLOGY OF ACID INTOXICATION.

Delivered before the Royal College of Surgeons of England on March 16th, 1908,

BY F. A. BAINBRIDGE, M.A., M.D. CANTAB., M.R.C.P. LOND., D.SC. LOND.,

DEMONSTRATOR OF PHARMACOLOGY, ST. BARTHOLOMEW'S HOSPITAL MEDICAL SCHOOL.

MR. PRESIDENT AND GENTLEMEN,—I wish to thank you for the honour which you have conferred upon me in inviting me to lecture here to-day. Acid intoxication, or, to use a wider term, acidosis, is merely one aspect of disordered metabolism, and our knowledge of its pathology has progressed to a large extent side by side with our knowledge of metabolic processes as a whole; it seems desirable, therefore, to discuss acidosis rather as a phase of metabolism than as a separate pathological entity. Without attempting to cover the whole subject, I propose in the time at my disposal chiefly to consider the results of the more recent investigations. It is necessary at the outset to draw a distinction between acidosis and acid intoxication. The essential feature of acidosis is the occurrence of certain organic acids in abnormal amount in the blood and urine; the most important of these acids are lactic and β-oxybutyric acids, and their estimation in the urine furnishes the most accurate means of measuring the intensity of the acidosis. The term acid intoxication should be limited to conditions in which, in addition to acidosis, toxic symptoms, referable to the organic acids, make their appearance. Acidosis may be accompanied by diminution of the alkalinity of the blood, and the urinary excretion of ammonia is usually increased. Even in acidosis, however, the alkalinity of the blood remains remarkably constant, though it may be temporarily disturbed by a sudden production of acid; and a normal alkalinity of the blood may coexist, as Magnus Levy has shown, with a considerable degree of acidosis. And neither the total excretion of ammonia in the urine nor the ammonia coefficient (i.e., the proportion of the total nitrogen excreted as ammonia) necessarily or even usually corresponds to the *degree* of the acidosis.

It is true that in acidosis the output of ammonia may reach a very high figure; in diabetes the daily excretion is often 3·5 grammes, and the excretion of 10 to 12 grammes has been recorded by Stadelmann, while the ammonia coefficient may rise as high as from 20 to 40. There is no reason, however, to believe that the tissues specially produce ammonia in order to neutralise the organic acids which are present; ammonia is normally formed by the tissues in considerable amount, and the organic acids merely combine with it and so prevent the liver from converting it into urea. In severe acidosis the limited amount of ammonia produced in the body is inadequate to combine with all the organic acids, so that the excretion of alkalies and alkaline earths becomes excessive; if the acidosis diminishes these valuable bases are retained in the body until their excretion has fallen to the normal level, the output of ammonia does not sink *pari passu* with the lessened output of organic acids. Satta has published some figures which clearly illustrate this fact:—

Day.	Total nitrogen.	Nitrogen as NH_3.	Percentage of NH_3.	β-oxybutyric acid.
1	12·89	2·1 grm.	16·2	8·24 grm.
2	11·42	1·88 ,,	16·4	0·46 ,,
3	8·93	1·17 ,,	13·1	0·18 ,,

It is clear, therefore, that even in acidosis the ammonia excretion may be fallacious and that an implicit belief in the value of the ammonia quotient is not free from danger. In a fasting woman, studied by Bönniger and Mohr, the following figures were obtained:—

Fast day.	Total nitrogen.	Total NH_3.	Percentage of NH_3.	β-oxybutyric acid.
3rd.	6·59	0·49	6·12	8·4 grm.
9th.	5·40	1·33	20·28	8·2 ,,
11th.	5·16	1·09	17·38	6·2 ,,
16th.	4·06	1·24	30·57	17·6 ,,

Such figures indicate that for the correct interpretation of ammonia analyses several factors must be taken into consideration. Fohn has shown that a healthy man placed on a diet poor in nitrogen but of adequate caloric value may excrete from 10 to 12 per cent. of his total nitrogen as ammonia, and a high ammonia coefficient has long been known to accompany the acidosis of starvation, the highest ammonia coefficient ever recorded (namely, 66 per cent.) having been obtained by Nabethan in a fasting woman. The high ammonia coefficient observed in pernicious vomiting of pregnancy is in all probability the result of partial starvation, as is evidenced by the beneficial effects of carbohydrate food and the very low output of total nitrogen in the urine. And it should be clearly recognised that when the nitrogen intake is low a high ammonia coefficient may have no pathological significance.

In very extensive disease of the liver, also, the excretion of ammonia may rise quite apart from acidosis. Weintraud has found a high coefficient in extreme cirrhosis of the liver and the excessive output in acute yellow atrophy may be accounted for in the same way. But a very small fraction of healthy liver suffices to carry out normally the conversion of ammonia into urea. Pearce and Jackson, using hæmolytic sera, found that extensive necroses of the liver had no effect upon the excretion of ammonia relative to the total nitrogen; and in the experiments of Underhill and Kleiner with hydrazine the urine remained normal notwithstanding the intense fatty degeneration of the liver cells. Clinical observations also show that extensive disease of the liver may be present, for example, in eclampsia without any corresponding alteration in the excretion of ammonia, and that only in almost complete disorganisation of the liver does the ammonia coefficient rise appreciably.

These considerations have a direct application to the acidosis caused by lactic acid, since its appearance in the urine is often regarded as dependent upon disease of the liver, which consequently fails to oxidise the lactic acid. This belief rests partly upon experimental, partly upon clinical, evidence. Minkowski found that after removal of the liver in geese the urine contained large quantities of ammonium lactate, but as Leathes points out lactic acid is a normal intermediate product of metabolism, and when the ammonia fails to be converted into urea it combines with lactic acid, and therefore the latter escapes oxidation. A similar explanation also accounts for the appearance of lactic acid in the experiments of Salaskin and Galeski on the removal of the liver in dogs, but in addition the animals showed tetaniform convulsions, and, as we know, convulsions or violent muscular exercise cause lactic acid to appear in the urine, quite apart from disease of the liver. Moreover, neither the extensive injury to the liver produced by hydrazine poisoning nor the interference with its functions caused by Eck's fistula is followed by the appearance of lactic acid in the urine.

In man lactic acid occurs in the urine in acute yellow atrophy and occasionally in extreme cirrhosis or cholæmia; there is unfortunately no satisfactory method of estimating lactic acid in the urine, but the amount excreted in these diseases appears never to be very large. It is significant that lactic acid occurs in those diseases in which the ammonia excretion rises when the liver is so damaged that it can no longer form urea, and that the excretion of ammonia appears to be larger than that of lactic acid. It may fairly be concluded, I think, that lactic acid occurs in the urine in cholæmia or acute yellow atrophy, not because the liver fails to oxidise it, but because, as in Minkowski's experiments, it combines with ammonia and so escapes into the urine; and the acidosis due to lactic acid is merely a "secondary" acidosis devoid of practical importance. This view is fully borne out by our general knowledge of the metabolism of lactic acid. It is normally present in the blood and in

muscle and appears to play an active part in metabolism; possibly it forms a stage in the transformation of sugar into fat or the production of sugar from proteid. The calorie value of lactic acid is almost equal to that of sugar and it may be expected therefore that its oxidation will occur in those tissues—namely, the muscles, which are the chief source of body energy. Hopkins and Fletcher have found that such is the case and that in the presence of oxygen frog's muscle can oxidise lactic acid. This mechanism is probably of great physiological importance, although during excessive muscular activity it is inadequate to deal with the large amounts of lactic acid formed and the acid appears in the urine. Several grammes of lactic acid have been obtained from the urine of patients shortly after an epileptic fit. And it seems almost certain that the occurrence of lactic acid noticed by Zweifel in eclampsia was due to the eclamptic convulsions, since he has not proved the presence of lactic acid in the urine before the onset of the convulsions. The observation of Longridge that in eclampsia the alkalinity of the blood is diminished does not support Zweifel's view that eclampsia is an acid intoxication caused by lactic acid, for Cohnstein has found that severe muscular exercise is capable of lowering the alkalinity of the blood. Further, much larger amounts of lactic acid than those found in eclampsia by Zweifel have been injected into the blood streams of animals without causing toxic symptoms. Finally, it may be pointed out that even in carbon monoxide and prussic acid poisoning the muscles as well as the liver are damaged and the appearance of lactic acid is due mainly to interference with the oxidation of lactic acid in the muscles.

These facts lead, I think, to the conclusion that lactic acid is never the cause of acid intoxication in man and that its appearance in the urine is either the result of excessive production by the muscles or is secondary to the failure of the liver to convert ammonia into urea; its occurrence is not due to deficient oxidation of lactic acid by the liver.

THE ACETONE BODIES.

Lactic acid is known to be normally formed in metabolism, but there has been much discussion as to whether this also holds good for the acetone bodies. There are many facts which render it highly probable that β-oxybutyric acid is a normal metabolic product. Knoop's experiments on the oxidation of aromatic compounds of the lower fatty acids in the body show that oxidation can occur in the β position; and Dakin has found that β-oxybutyric acid is probably formed when ammonium butyrate is oxidised *in vitro*. It is known also, from the observations of Schwarz and Waldvogel, that the tissues are able fully to oxidise considerable amounts of β-oxybutyric acid given by the mouth. On the other hand, diacetic acid has never been found in normal urine; traces of an iodoform-yielding substance have frequently been obtained in normal urine, but the iodoform reaction is yielded by so many substances other than acetone that it is doubtful whether acetone occurs normally in urine. The tissues seem unable to burn up acetone when given by the mouth, since the bulk of it can be recovered from the breath and urine, and it seems improbable that acetone is formed in normal metabolism. The fact, noted by Satta, that the iodoform-yielding substance in normal urine is uninfluenced by carbohydrate food points to this conclusion.

Although the chemical relationship of these bodies is very close, the failure to obtain diacetic acid from β-oxybutyric acid *in vitro* had raised doubts as to whether diacetic acid and acetone were really derived in the body from β oxybutyric acid. Dakin has shown, however, that diacetic acid and acetone are readily obtained by the oxidation of ammonium butyrate with hydrogen peroxide.

The view that the acetone bodies arise from fat has been largely developed by Rosenfeld, Waldvogel, Hirschfeld, and Geelmuyden. Waldvogel showed that a meal of proteid during a period of starvation lessened the output of acetone bodies; Geelmuyden found that the addition of large amounts of fat to the diet increased the acetonuria; and, finally, Rosenfeld observed that the acetone bodies appeared in the urine of healthy men on a full diet of proteid and fat if carbohydrates were withheld. In man the appearance of the acetone bodies in the urine is usually the result either of a deficiency of carbohydrate food or, as in diabetes, of inability of the tissues to utilise carbohydrates, and, according to Hirschfeld and Geelmuyden, very small amounts of carbohydrate (50 to 100 grammes) suffice to abolish the acetonuria of starvation.

There seems to be no doubt that when carbohydrate is withheld, and still more in starvation, the consumption of fats is excessive, and the view has been put forward that the tissues, unequal to the strain thus put upon them, fail to oxidise the fats completely and that β oxybutyric acid passes into the blood and urine. If this view is correct, a diet of fat only should still further increase the strain on the tissues and should largely increase the excretion of β oxybutyric acid; Geelmuyden found that such was the case in a man who lived for several days on large quantities of oil and a little vinegar. On the other hand, many observers have found that the addition of fat in starvation had little or no influence upon the acetonuria. In the careful experiments of Joslin on a healthy starving man 100 grammes of butyric, stearic, or palmitic acid did not increase the output of acetone bodies, although examination of the fæces showed that the bulk of the fatty acid was absorbed. He also quotes the following figures from Rosenfeld:—

Total Acetone Bodies in Urine.

Day.	Starvation.	190 grammes of butter daily.	800 grammes of meat daily.
1	0·09 grm.	0·08	0·016
2	0·3 „	0·23	0·012

In other cases the increased output of acetone bodies was trifling in comparison with the additional intake of fat, a result in accordance with von Noorden's dictum that fat given to a starving man does not increase the total consumption of fat, but that the fat of the food is used instead of the body fat. Admitting then that the acetone bodies are derived from fat, and that in starvation the consumption of fat is increased, the inconstancy of the results obtained on a diet of fat indicates that the tissues of a healthy man can deal with large quantities of fat, and that it may not be safe to assume that the acidosis of starvation is the direct result of the excessive consumption of fat.

The facts, moreover, are capable of a totally different interpretation. The acidosis of starvation can be abolished by the administration of quite small amounts of carbohydrate, amounts so small that the energy which they supply to the body is slight and cannot greatly lessen the consumption of fat. In may be that in starvation acidosis occurs not because the consumption of fat is excessive, but because carbohydrate is absent, and the addition of carbohydrate may abolish acidosis not only by supplying energy to the body but also by modifying the metabolism of the cells. We know very little of the complex mechanism of metabolism, and it is quite conceivable that the presence of carbohydrate or its products is essential to the carrying out by the cell of some of its oxidative processes, including the complete oxidation of fat. And there is some evidence that the metabolism of fat may be made to follow its normal course by the administration of substances other than carbohydrate. Satta has studied the effect of a number of substances which lessen acidosis, and which he calls "anti-ketoplastic." These bodies include tartaric and citric acid. He found that 40 grammes of citric acid given daily greatly lessened the acidosis of starvation. The results of Baer and Blum are more conclusive. They examined the effect of glutaric and the homologous dicarboxy acids upon the acidosis of phloridzin glycosuria, and some of their results are shown in the following table:—

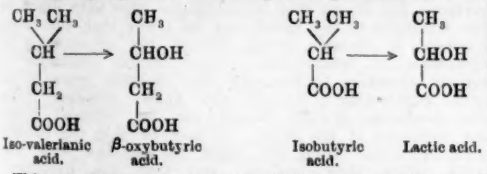
Day.	Total nitrogen.	Sugar.	Acetone.	β-oxybutyric acid.
1	5·9	14·8	209 mgr.	1·49 grm.
2	6·2	18·0	465 „	2·29 „
3*	3·1	7·5	49 „	0·18 „
1	8·2	13	288 mgr.	1·78 grm.
2	8·0	11	323 „	2·73 „
3†	1·5	< 1	106 „	0 „

* 7 grm. adipic acid. † 10 grm. glutaric acid.

They consider that the retention in the body of sugar, nitrogen, and acetone bodies can be excluded and that glutaric and other homologous acids modify the nitrogenous

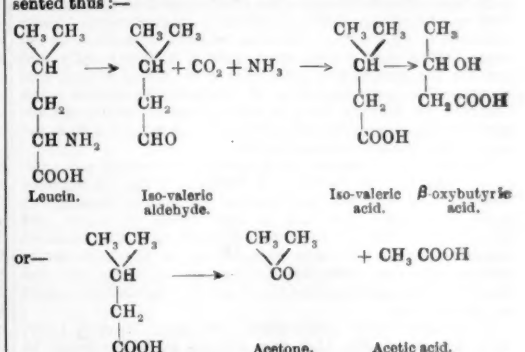
metabolism in such a way that sugar is either not formed from proteid or is burnt up by the tissues, and that the increased supply of energy thereby obtained prevents the formation of the acetone bodies. These observations are extremely suggestive and may not only furnish a clue to the means by which carbohydrate food abolishes acidosis but also throw some light on the interaction of the various food products within the cell. But, whatever may be its explanation, there is no doubt that the acidosis of starvation results from a lack of carbohydrate. Waldvogel has suggested that in diabetes acidosis is due to an impaired oxidative power of the cells of the tissues. There is, however, no definite evidence that the acidosis of diabetes differs essentially in its origin from that of carbohydrate starvation in healthy individuals except that the starving man can utilise any sugar which is formed in the body from proteid, whereas the diabetic patient is unable to do so. From this point of view diabetes is a condition of prolonged carbohydrate starvation, and the importance of the acidosis lies in the fact that it ultimately leads to acid intoxication and coma. According to Külz coma is the natural termination of diabetes, and the more severe the acidosis the more rapid the course of the disease. It is most desirable, therefore, to ascertain what are the more immediate precursors of the acetone bodies and how far the acidosis can be influenced by diet or in other ways.

A considerable body of facts bearing on this question has been obtained but partly on account of the wide spontaneous variations in the urinary excretion of diabetic patients from day to day, partly on account of the difficulties inherent to metabolic observations on man, the results are not always concordant or easy to interpret. In the first place it appears that the bulk of the β-oxybutyric acid is derived fairly rapidly from ingested food. Allard found that an occasional "fast day" markedly lessened the output of acetone bodies and that the beneficial effect lasted for several subsequent days. In the case of a severe diabetic in nitrogenous equilibrium, a fast-day reduced the excretion of β-oxybutyric acid from 17·3 grammes to 2·9 grammes; the ammonia fell from 5·8 grammes to 3·1 grammes. Equally definite results were obtained in other cases. Secondly, there is no doubt that the lower fatty acids notably and quickly increase the output of the acetone bodies. This was first demonstrated by Schwarz for butyric, cupric, and iso-valerianic acids and has been repeatedly confirmed; and the conversion of these acids into β-oxybutyric acid occurs so readily and supplies so little energy to the body that their exclusion from a diabetic diet seems desirable. Some light has been thrown on the chemical changes involved in this procers by the observations of Baer and Blum. They administered a number of fatty acids to severe cases of diabetes, kept on a uniform diet, and found that 20 grammes of iso-valerianic acid increased the output of β-oxybutyric acid from 1·5 grammes to 9·8 grammes, whereas isobutyric acid yielded lactic acid. They conclude that a split occurs at the β-carbon atom and that a methyl group separates off, leaving a straight chain acid.



This reaction represents a chemical process which has not hitherto been observed in the body. It is highly probable, however, that β-oxybutyric acid is formed not only from the lower but also from the higher fatty acids. The modern conception of fat katabolism is that the saturated fatty acids derived from the food or from the fat depôts in the body are converted by the liver into fatty acids with several unsaturated linkages; these unsaturated fats then pass to the muscles where their oxidation is completed. Fatty acids with three double bands have been found constantly in the liver by Hartley, and the fat of the heart muscle appears to be of the same nature. Although the liver can probably form β-oxybutyric acid most of the energy of the body is furnished by the muscles, and it is reasonable to suppose that the final stages in the oxidation of fat, whose combustion supplies so much energy, is carried out chiefly in the muscles. It is quite possible that the breakdown of the unsaturated fatty acids does not occur by the oxidation of one or two carbon atoms at a time, but that the fat molecule, rendered unstable by the presence of several double linkages, suddenly breaks up into a number of fatty acids of comparatively small molecular weight. If butyric acid is one of these acids the rapid production of β oxybutyric acid from higher fats is easily intelligible and the speedy increase of the acetone bodies, when oleic or stearic acid is given to diabetic patients, may be thus interpreted. Apart from butyric acid, however, the rest of the fat molecule appears to undergo complete oxidation. Although fats are the most important source of the acetone bodies the advance in our knowledge of proteid metabolism has again brought into prominence the possible formation of β oxybutyric acid from proteid. It is now believed that during digestion the proteid molecule is largely broken down and that the products—chiefly amino acids—are again synthesised by the tissue cells. Lang has shown, also, that the various tissues have the power of denitrifying amido acids, leaving a simple fatty acid. It is possible, therefore, that the final stages of fat and proteid katabolism may proceed along similar lines. There is, at any rate, definite evidence that leucin can give rise to the acetone bodies. Dakin has shown that when leucin is oxidised *in vitro* by hydrogen peroxide, acetone, iso-valerianic aldehyde, iso-valerianic acid, and ammonia are produced. And Strecker long ago found that in the presence of alloxan iso-valerianic acid is formed from leucin. Alloxan probably exists normally in the liver, and Strecker's observation may have some bearing on the work of Embden, Almagia, and Salomon. They perfused the surviving liver of dogs with blood, to which various proteid derivatives had been added, and estimated the amount of acetone formed. The perfusion of normal blood yielded small amounts of acetone, and the addition of alanin, glycocoll, and glutaminic acid was without effect. But when leucin or iso-valerianic acid was added to the blood they obtained a considerable quantity of acetone, and β-oxybutyric acid was still more effective. Their method of estimating acetone is open to criticism, since so many substances give the iodoform reaction, and it is not certain that they obtained acetone by the perfusion of normal blood. But when leucin was added to the blood, acetone was actually isolated as dibenzylacetone. Finally, Borchardt in the case of a normal man deprived of carbohydrate and Baer and Blum in a diabetic patient found that leucin increased the output of both acetone and β-oxybutyric acid.

The conversion of an amido acid into the aldehyde of the lower acid, with loss of ammonia, is a very general reaction, and the next stage may be the splitting of a methyl group and the formation of β-oxybutyric acid, and finally of acetone. The production of acetone in Embden's experiment is a little difficult to understand, unless β-oxybutyric acid is an immediate product, since, as far as is known, acetone is not normally formed in the body; possibly the transformation of leucin normally ceases with the formation of β-oxybutyric acid, and the production of acetone in the perfusion experiments is not strictly physiological. The probable sequence of the chemical reactions may be represented thus:—



The different proteids vary greatly in the amount of leucin which they yield on hydrolysis. Muscle proteid has not been analysed, but casein yields 10 per cent. of leucin, egg albumin and gliadin (of wheat) 6 per cent., and gelatin only 2 per cent.

When one considers the large amount of proteid often

consumed by diabetic patients, it seems quite possible that the intake of proteids yielding much leucin may appreciably influence the degree of acidosis, and experiments carried out from this standpoint might be of considerable value in showing which proteids are the most suitable in diabetes. I have already referred to the work of Satta and of Baer and Blum on the influence of citric and glutaric acids in lessening acidosis. These substances should be of extreme value in diabetes in which carbohydrate is not available, and through the kindness of Dr. Norman Moore, Dr. Hurtley and I have had the opportunity of studying the effect of citric and glutaric acids upon the output of acetone bodies in a diabetic patient. The results of giving 20 grammes of citric acid daily for a week are shown in the following table:—

Day.	β-oxybutyric acid.	Acetone and diacetic acid.	Total estimation as β-oxybutyric acid.
1	10·83 grm.	3·19 grm.	15·38
2	5·88 ,,	2·43 ,,	9·35
4	1·64 ,,	0·93 ,,	2·96
6	2·03 ,,	1·19 ,,	3·73 *
8	4·58 ,,	1·02 ,,	6·03
10	4·51 ,,	1·61 ,,	6·81
12	7·13 ,,	2·59 ,,	10·83

* 20 grammes citric acid daily.

Similar effects were obtained by the use of glutaric acid, and while not laying too much stress upon the results of one or two experiments, these figures seem suggestive; if they can be uniformly obtained, the employment of citric acid and other substances may render the treatment of acidosis much more hopeful than has hitherto been the case and may delay the onset of coma.

It is well known that in starvation even a severe acidosis is consistent with fair general health, and it is not uncommon for a diabetic patient to excrete for months large quantities of β-oxybutyric acid without showing any symptoms of poisoning. But it does not follow, therefore, that a prolonged acidosis is not harmful to the tissues, although their appearance may be long delayed; the grave metabolic disturbances which usher in diabetic coma probably represent the final defeat of the tissues in their struggle to eliminate the acids, which they produce, and to preserve intact their normal metabolism and chemical constitution. Our knowledge of the pathology of diabetic coma is very limited, but apart from the clinical symptoms definite changes occur in the blood and urine, and I may briefly refer to them before proceeding to discuss their possible explanation. The onset of coma is usually preceded for a day or two and accompanied by a fall in the output of the acetone bodies, the excretion of β-oxybutyric acid may sink from 15 grammes or more to as little as one gramme, and the acetone and diacetic acid may be either absent or present only in traces. Some estimations by Folin of the total amount of acetone in the urine before and during coma show this very clearly and confirm the qualitative observations of West, Wolpe, and others. The large excretion of β-oxybutyric acid in coma observed by Magnus Levy is only observed after the administration of sodium carbonate and does not seem to occur when coma takes its normal course.

The decreased excretion of acetone in the breath also indicates that the production of acetone bodies is actually lessened and that the kidneys are not unable to carry out their functions. The fall in the output of sugar and nitrogen, the fall of body temperature, and the lessened intake of oxygen all point to a decline in the total metabolism. Equally characteristic features of coma are the diminished alkalinity of the blood and its diminished content of carbonic acid.

From these facts Stadelmann, and later Magnus Levy, drew the conclusion that the organic acids produced in diabetes combine with so much alkali in the blood that not enough is left to take up the carbonic acid from the tissues; carbonic acid, therefore, accumulates in the tissues and finally poisons them. Diabetic coma is, in fact, due to poisoning by carbonic acid. But Beddard, Pembrey, and Spriggs found that even in cases in which the alkalinity and CO_2 content of the blood were very low, the blood when shed was able to take up a normal amount of carbonic acid, and they concluded that the capacity of the blood in diabetic coma to take up carbonic acid is not impaired. Again, if Stadelmann's view is correct the tension of carbonic acid in the tissues should be very high and the CO_2 tension of the saliva or urine should also be high, since the tension of carbonic acid in these fluids closely approximates to that of the secreting tissue cells; in point of fact, Beddard, Pembrey, and Spriggs found that the CO_2 tension of the urine was not raised. In the face of their observations it is very difficult to believe that the theory of the overloading of the tissues with carbonic acid offers an adequate explanation of diabetic coma.

A fundamental objection to this view is that the primary morbid alteration is assumed to occur in the blood instead of the tissues, whereas the composition of the blood is ultimately regulated by the tissue cells and the causation of diabetic coma lies almost certainly in their abnormal metabolism. It is not easy, however, to form a clear conception of the way in which the organic acids produced by the tissues eventually disturb their metabolism. Acid intoxication, in the strict sense of the term—that is, poisoning by hydrogen ions—never occurs, since the tissues never lose their alkaline reaction; the term is justifiable, however, if it is used to describe the metabolic disturbances resulting from the abnormal production of acids in the body or from the administration of mineral acids accompanied by a fall in the alkalinity of the blood and tissues. The tissues are very sensitive to even a slight diminution in their alkalinity, and the acute intoxication produced by mineral acids is believed to be due to a fall in the alkalinity of the blood and tissues or, in other words, to a diminution in the concentration of hydroxyl ions relative to the hydrogen ions; this has been proved to occur as far as the blood is concerned. The close similarity between the symptoms of acute acid intoxication in animals and those of diabetic coma naturally suggests that the latter is also an acid intoxication. And Magnus Levy considers that the amount of β oxybutyric acid present in the blood and tissues in diabetic coma is more than equivalent to the quantity of mineral acid required to produce symptoms of acid intoxication in animals; his calculations were based upon the lessened alkalinity of the blood and tissues in coma.

Moore has shown that the blood, in virtue of its phosphates and carbonate, can take up large amounts of acid or alkali without appreciable alteration in its reaction; this is effected by alterations in the relative amounts of mono- and di-sodium phosphate and of sodium carbonate. It is possible that as long as the blood can take up the acids produced by the tissues no symptoms of intoxication arise, but that if the protective mechanism provided by the phosphates becomes inadequate and the alkalinity of the blood falls, the tissues can no longer get rid of the acids which they produce and their accumulation in the cells brings metabolism to an abrupt end.

On the other hand, Benedikt, making use of physical methods, has shown that in conditions other than diabetes the alkalinity of the blood may be lower than that ever observed in diabetic coma, without the appearance of symptoms of intoxication. These results constitute a serious objection to the view that diabetic coma is an acid intoxication. We do not know, however, that the condition of the tissues can be inferred from the alkalinity of the blood. It may be that the tissues take up alkali from the blood to combine with the acids which they produce, and that the decreased alkalinity of the blood is a secondary phenomena. Possibly, also, too much stress has been laid upon the analogy between diabetic coma and experimental acid-intoxication. Acute mineral acid intoxication lasts only a few hours or days, and the conditions may be very different in diabetes, in which a prolonged acidosis lasting for months or even years ultimately ends in coma. In the latter condition there is a continuous drain upon the alkalies and alkaline earths of the body, since the formation of ammonia is insufficient to combine with all the acid excreted. In the acidosis of diabetes the excretion in the urine of calcium and magnesium, probably also of sodium and potassium, is abnormally large. Part of the calcium is derived from the bones, but the observations of Gottein show that the muscles also probably lose calcium. He found that animals fed on a diet rich in calcium stored it up in the bones and muscles, whereas on a diet poor in calcium both these tissues yielded calcium to the urine. There is also evidence

that if the acidosis lessens the fixed bases are spared and retained in the body and the ammonia excretion remains high. It is of importance, too, to bear in mind in this connexion the observations of Forster, Lewin, and others that animals whose diet is ash-free, but otherwise normal, soon show signs of perverted metabolism, and that death ensues in a few weeks. The symptoms are chiefly referable to injury to the central nervous system and were regarded by Bunge as the result of an acid intoxication.

Obviously even a trifling daily loss in bases, a loss so small as almost to escape observation, may in course of time rob the tissues of much of their bases; and the excretion of bases in the diabetic patients studied by Magnus Levy was much larger than those of normal individuals. Observations on the total intake and output of bases in diabetes are lacking but it seems very probable that there is a gradual depletion of the alkalies in the tissues, and that a point is ultimately reached when the alkali content of the tissues is insufficient for normal metabolism and symptoms of intoxication occur. It is possible, of course, that the gradual loss of alkali simply lessens the amount of base available for the neutralisation of acid, and that the ultimate result is an acid intoxication due to the diminished alkalinity of the tissues. On the other hand, it is not fair to assume that a deficiency of alkali is synonymous with a relative acidosis. Although we do not know how or why inorganic bases are essential to the bioplasm, their importance for normal metabolism is a matter of common physiological knowledge, and no one imagines that calcium, for instance, the presence of which is necessary for the normal contraction of the muscles, acts solely in virtue of its being a base. It seems to me extremely probable that the lack of some or all of the bases may primarily disturb the course of metabolism, quite independently of the alkalinity of the tissues; and after all the alkalinity of the tissues does not depend solely upon their inorganic constituents, since the proteins can apparently act either as weak acids or as bases. On this view, even the diminished alkalinity of the blood in coma may be interpreted as due to a final effort on the part of the tissues to satisfy their need for base. It is not sufficient to supply the body with sodium carbonate, and the value of the treatment of diabetes with alkali might be much greater if all the bases required by the body were administered to diabetic patients. An accurate knowledge of the amount and character of the bases present in diabetic tissues would also be of extreme value.

POST-ANÆSTHETIC ACETONURIA.

Acetonuria occurs in children in a variety of conditions, but I can only refer briefly to one—namely, the acetonuria following anæsthesia. It seems to have been first noticed by Becker in 1895; he examined 251 cases and found acetone or diacetic in 167. The condition appeared to be independent of the nature of the anæsthetic or the duration of the anæsthesia and was more severe in cases of pre-existent acetonuria. While children were the most liable, adults were not exempt. These observations have been generally confirmed by English and American writers, although most of them regard chloroform as the anæsthetic most likely to cause acetonuria. In the majority of cases acetonuria is the only symptom, but occasionally definite toxic symptoms occur and death may ensue. The most characteristic symptoms are intense thirst, vomiting, restlessness, and finally coma; air-hunger has been observed in some cases. The amount of acetone in the urine may reach a high percentage; Beesley found from 20 to 60 milligrammes per 100 cubic centimetres, an amount comparable to that in fairly severe diabetes. β-oxybutyric acid has sometimes been estimated and in one case Waldvogel obtained 2·5 grammes in 24 hours. Although the literature of the subject is extensive, no estimations seem to have been made either of the alkalinity of the blood or the ammonia excretion in the urine. Post mortem the liver has been constantly found to exhibit intense fatty infiltration with patches of necrosis, and Telford observed fatty change in the cardiac and other muscles.

The interest of post-anæsthetic acetonuria lies in the appearance of symptoms of acute intoxication in certain cases and in its relation to other forms of acetonuria. The power of the anæsthetics to interfere with metabolism as a whole, and their toxic action upon protoplasm are well known. Our knowledge of their exact mode of action is scanty, but, broadly speaking, they inhibit metabolic processes, as is indicated by Loewry's observation that they diminish the intake of oxygen by the tissues; and Moore and Roaf consider that they lessen the metabolic activity of the tissues by combining with the tissue proteins. The metabolic disturbance caused by anæsthesia is usually trivial, because the anæsthetic speedily leaves the tissue when the anæsthesia comes to an end. The severe toxic symptoms which occasionally follow anæsthesia can only be explained, I think, by assuming that the anæsthetic remains in combination with certain tissues, since doses of anæsthetics which are too small to induce anæsthesia if frequently repeated will produce similar metabolic disturbances in animals. The varying susceptibility or "idiosyncrasy" of different individuals to the action of all poisons, including anæsthetics, must be acknowledged, even though it cannot be explained. If it be admitted that occasionally the anæsthetic remains in combination with the tissues the occurrence of acetonuria is the inevitable outcome of their lessened oxidative capacity. Post-anæsthetic acetonuria is, in fact, closely analogous to phosphorus poisoning, in which the oxidative capacity of the tissues is primarily damaged. The inhibition of metabolism by anæsthetics results in the incomplete combustion of fat and β-oxybutyric acid and its products appear in the urine, and the failure of the muscles to burn up fat leads to its accumulation in both the muscles and the liver. Fatty infiltration of the liver can occur with remarkable rapidity and there seems to be no reason to believe that when symptoms of intoxication occur after anæsthesia the liver was previously diseased. Equally severe fatty infiltration of the liver may be found in other conditions, not only without the appearance of toxic symptoms but even without any acetonuria.

Although the acetonuria depends upon the imperfect combustion of fat by the tissues, it is by no means clear that the toxic symptoms are due to the acetonuria. I have found in other conditions in which no symptoms of acid intoxication were present, an amount of acetone equal to that observed in the cases of post-anæsthetic intoxication. Unfortunately, nothing is known as to the alkalinity of the blood and the excretion of ammonia in these cases, and the facts at our disposal are insufficient to exclude acid intoxication. But it does not seem probable that the toxic symptoms following anæsthesia are due to an acid intoxication. The toxic action of anæsthetics is known from animal experiments to affect not only the oxidation of fat but metabolism as a whole, and closely resembles that of phosphorus. In both cases acetonuria occurs and the liver shows morbid changes, and whatever may be the significance of post-anæsthetic intoxication it seems unjustifiable to refer the symptoms either to the liver or to the acetonuria.

I ought, perhaps, to allude to carbohydrate starvation as a factor in post-anæsthetic acetonuria. Waldvogel pointed out that patients who took carbohydrate freely before and after operation seemed to be less liable to acetonuria. And it is probable that post-anæsthetic acetonuria may sometimes arise solely from carbohydrate starvation, especially in those cases in which, owing to fever or vomiting, but little food is taken for some days before operation. The metabolism of children appears to be less stable than that of adults, and they react very quickly to a lack of carbohydrate, possibly because their reserve supply is relatively small. But it is obvious that, apart from previous carbohydrate starvation, the tissues, poisoned by the anæsthetic and unable to utilise fats (and possibly proteids), will speedily use up the available carbohydrate in the body, and a plentiful supply of carbohydrate, not only when symptoms of intoxication occur after anæsthesia but also as a routine preventive measure before operation, appears to be the rational treatment of post-anæsthetic intoxication. It must be remembered, however, that there is no absolute proof that in these circumstances the metabolism of carbohydrate is normally carried out; the frequency of glycosuria, in fact, points in the opposite direction.

INTERNATIONAL PRIZE FOR OPHTHALMOLOGY.—The Royal Hungarian Minister of the Interior has offered the sum of 1000 crowns as a prize to the author of the best work on the Etiology of Trachoma. All work which is original, whether in manuscript or published for the first time in 1907 or 1908, will be eligible for the competition, provided it is in English, Hungarian, French, or German, and that it is received by Dec. 31st, 1908, at latest by the Minister of the Interior, Belügyministerium, Budapest, Hungary. The jury will be appointed by the Minister and its verdict will be announced at the inaugural sitting of the forthcoming International Congress of Medicine.

The Lettsomian Lectures

ON

TUBERCULOSIS OF THE KIDNEY,

AND

MALIGNANT DISEASE OF THE CÆCUM.

Delivered before the Medical Society of London on Feb. 3rd and 17th, and March 2nd, 1908,

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SURGEON TO, AND JOINT LECTURER ON SURGERY AT, GUY'S HOSPITAL.

LECTURE II.[1]

Delivered on Feb. 17th.

TUBERCULOSIS OF THE KIDNEY (*continued*).

MR. PRESIDENT AND GENTLEMEN,—In the first lecture I placed before you cases illustrating the early signs of renal tuberculosis and showed the condition of the kidney when removed. Except in one there was no enlargement to be felt, and in the instance where this occurred it appeared somewhat suddenly as a final symptom (Case 4).

Before offering some comments upon the points raised by these cases a word must be said of that form of renal tubercle which gives rise to a tumour. The large, moveable, painless, tuberculous kidney is too well known to need any but a passing reference. The cases are fairly common and those that have come under my notice have all given a history of attacks of pain extending over one to three years. In a typical case operated upon in 1902 and quite well in 1908 there had been frequent micturition in the early stages and then repeated attacks of pain. As the tumour enlarged the vesical symptoms ceased. The tumour could be seen moving on respiration, was lobulated, painless, and resembled a hydronephrosis. There were very little pus and albumin in the urine and no increase of urine or pus after an attack. The general health of these patients is on the whole good and they are able to work. These cases resemble hydro- or pyonephrosis in the length of the history, the character of the pain, the moveable and lobulated character of the tumour. I call attention to this, not as an early form of renal tuberculosis but as one where the diagnosis can now in all probability be settled by an examination of the urine.

Before considering the question of treatment I would call attention to certain of the early symptoms. Amongst these renal colic is perhaps the most interesting of all the initial signs of renal tubercle. The exact resemblance to that produced by a calculus cannot be better exemplified than in Case 2. Here was a man of 46 years, though not up to hard work yet looking in good health, seized with severe renal colic. And not only did the three attacks thus closely resemble calculous disease but the likeness was made still closer by the vesical irritation which followed. In Case 1, a young lady, aged 20 years, the long interval between the attacks—one year—points once more to the necessity of careful and routine examination of the urine if we are to discover and treat tubercle early. When renal colic occurs it would seem to indicate that excavation has taken place, whether in one small focus, as in Case 1, or in several, as in Case 2. I mean it suggests more than miliary tubercle and would support the decision to operate. This symptom was absent in Case 3, where the ureter was affected, so that this latter condition may exist without spasmodic pain. Regarding the value of renal colic as an indication of the stage and distribution of tuberculosis, it must have occurred at a very early stage in Case 1, for when the kidney was removed two years later the original focus was small. On the other hand, in Case 2, where the first attack occurred four months before removal, the specimen shows that the disease must have been in existence for a long time—two years or more. The curious abdominal attacks preceding by some two years the vesical symptoms in Case 4 must be grouped under this head.

Albuminuria, one of the early signs of renal tuberculosis, has perhaps not attracted sufficient attention. The association with vesical irritability especially should lead at once to an examination of the urine for bacilli, and again when the amount of albumin is more than can be accounted for by the pus. In Case 4 the cystoscope pronounced the kidney and ureter free from disease but the large amount of albumin led us to fear bilateral renal infection. That it came from one side was proved by its disappearance after nephrectomy. The amount of albumin does not appear to bear any uniform relation to the extent of disease, nor apparently to the form which it takes. Thus in Case 1, with the tuberculous process limited to the lower pole, the albumin was at times abundant. In Case 3, with far more extensive disease but without excavation, the albumin was never excessive, though always more than could be explained by the pus. This is the main point as regards albumin—the proportion to the pus. The contrast was most marked in Case 4, where the pelvis of the kidney was obliterated and the tuberculous foci were shut off from the ureter. In Case 2, with destruction of the lower third of the kidney and recent miliary tubercle, the albumin was never abundant. The fact that miliary tubercle is a painless condition, and that extensive destruction may take place without pain, intensifies the importance of a bacteriological examination of the urine when albumin is present without a general cause being found.

Vesical and urethral irritability without implication of the bladder were in one case (Case 3) the only symptoms up to the time of operation. There was just a suspicion of right renal infection, but only with the aid of the cystoscope was accurate diagnosis possible. This symptom in another case (5) had existed for more than a year, and at one time was thought to be a reflex effect of hæmorrhoids, which were in consequence removed, but without benefit. It was sufficient to limit this patient's activities and it will be remembered that the next symptom was hyperpyrexia without any localising sign. Perhaps the cystoscope might have indicated the kidney affected and saved the laparotomy, but the case occurred in 1897 before I was personally acquainted with the value of this method of examination.

As might be expected when the bladder is involved, the vesical irritability is more pronounced, and so no doubt it is, but, on the other hand, as shown by Case 4, the vesical irritation may be quite moderate where marked tuberculosis exists. In more than one instance of renal tubercle, without vesical disease, it was this symptom that alone compelled attention. That the bladder is tolerant of tuberculous pus is shown by several cases. In some the infective material must have entered the bladder for two years without causing irritation; in others probably for a longer period; while in other cases I have seen quantities of almost pure pus passed with little vesical irritation. This point is worth noting in view of the possibility of this complication being unduly urged as an argument for immediate operation.

At what period in the course of renal tuberculosis does vesical irritation arise and to what is this symptom due? An examination of the specimens in the light of the history of these cases shows that renal tuberculosis may reach an advanced stage without causing vesical symptoms. For example, in Case 2, and probably also in Case 3, the renal condition had existed some time before the urethral pain arose. It would appear, then, that this symptom, when persistent, indicates advanced disease of the kidney. Again, it is to be noted that in all the cases operated upon the ureter was involved and that where the cystoscope was employed the lips of the orifice were everted and swollen and in one studded with tubercles. It is probable that the persistent irritation indicates extensive ureteric infection. That the mere fact of ureteric infection is in itself not the cause is shown by the disappearance of the pain after nephrectomy. The passage of the urine down a narrowed channel appears to be the explanation of this pain. Evidently a small plug of mucus will be sufficient to cause severe colic, as it did in Case 2. The above reasoning is sufficient to show the importance of this symptom, as indicating, when persistent, advanced disease and pointing to the necessity of early nephrectomy. The condition of the ureter probably explains the observation that vesical irritation is more marked in tubercle than in calculus. The importance of a bacteriological examination of the urine when these symptoms exist is obvious. It may be necessary to examine several specimens, as the bacilli may be few in number, and here the superiority of an electric-driven centrifuge becomes apparent.

Of hæmaturia as an initial symptom I have seen, or more correctly recognised, only one instance. A man, aged 37 years, was admitted into Guy's Hospital under my care on

[1] Lecture I. was published in THE LANCET of March 21st, 1908, p. 833.

Feb. 20th, 1907, with a history of frequent micturition for five weeks, beginning quite suddenly with hæmaturia. He passed large quantities of blood for three weeks, and when admitted he had pain at the end of the penis and along the urethra, increased on micturition. Nothing was found on examination of the bladder by sound or cystoscope. The man at first passed urine every few minutes with great pain. There were some pus and albumin in the urine with tubercle bacilli. In three weeks with ordinary treatment the symptoms were much relieved and he could hold his urine for an hour. On March 15th he had the first injection of tuberculin and regularly attended under Dr. J. W. H. Eyre for this purpose as an out-patient. In six months this man had grown so stout and well as to be quite unrecognisable. All symptoms had long disappeared and the urine was free from pus and bacilli. I have no proof that this was renal tuberculosis but the clinical history suggests ulceration of the summit of a pyramid.

A routine examination of the urine for tubercle bacilli when small quantities of albumin and pus are found without renal or vesical symptoms, but associated with ill health and anæmia, will no doubt in the future discover many cases of early tuberculosis of the urinary tract. There can be little doubt that tubercle bacilli were present in Cases 1 and 2 long before the attacks of renal colic. The next point in the investigation of such a case is to discover if possible which kidney is affected by means of the cystoscope, or segregation, or other methods. The ureteric orifice will not exhibit characteristic changes till the ureter itself is affected. It may therefore be impossible to be quite sure which kidney is affected, as catheterism of the ureter is generally admitted to be dangerous in the presence of infection, and segregation is not completely to be relied upon. In the absence of localising evidence for treatment we must rely upon general methods and tuberculin injections, and it will be valuable in the future to know how far such treatment is successful. There seems no reason why renal tubercle taken early should not recover, and it is probable that among the cases of slight albuminuria treated on hygienic lines with good effect there have been instances of tuberculosis.

How long are we justified in waiting after tuberculosis has been localised in one kidney? That there is no necessity for immediate nephrectomy is shown by the cases recorded in the first lecture. The two complications—viz., infection of the bladder and of the other kidney on the one hand and dissemination of tubercle on the other—are certainly long delayed, and in many cases, extending over some years, never occur. Where, therefore, the tubercle bacilli are few in number, the albumin and pus variable and often small in amount, and where vesical irritation is quite bearable, the bladder healthy, and the ureteric orifice normal, postponement is justifiable, and how far complete recovery can be brought about under such conditions has yet to be ascertained. When the ureteric orifice shows positive evidence of disease operation should no longer be delayed.

Is the condition of the kidney any guide to expectant treatment? Roughly, there are two forms of renal tuberculosis: that where the products of destruction are retained, giving rise to a painless moveable tumour in the presence of good general health, and that where the products escape and the kidney, though somewhat enlarged, as in Case 3, may not be so clinically. In both the ureter is involved. In the first the bladder is less likely to be infected, though the vesical irritation may be quite as troublesome as in some of the second class.

These being the facts, which kidney gives the most favourable prognosis? An answer demands a more complete acquaintance with the later history of both classes of cases than we possess, especially of the second. The tumour cases, being so obvious, have been observed and spontaneous recovery, either by caseation or escape of the contents, is known to occur. So far as I know we must wait for the later history of the second group treated without operation. There is good reason for believing that cicatrisation of even extensive disease may occur, as in Case 2, leaving much of the kidney healthy. On the other hand, the danger of vesical and renal infection point to this variety causing more danger than that where the products are encysted.

Attention has been called to the well-established observation that both kidneys are rarely affected at the same time. Renal tuberculosis is in fact generally unilateral. The recognition of this distribution of the disease is of prime importance in considering surgical treatment, and therefore the means at our disposal for ascertaining the incidence of the disease become of the greatest moment. In a great many cases the clinical evidence is sufficient; there is pain on one side, as in Cases 1, 2, and 4. Again, there is, in addition, in the acute type, enlargement of one kidney. In Case 3 these signs were absent, and except for the newer methods of investigation operative treatment would have been delayed. It is beyond the scope of this lecture to enter into an examination of the value of segregation, cryoscopy, cystoscopy, &c. These questions have been recently discussed before the society, and it is sufficient to acknowledge the essential help afforded by cystoscopy in the management of these cases. Of the various methods this certainly seems the most reliable, but demands, like similar modes of investigation, constant practice, and most of us will have to rely for interpretation and guidance upon those specially skilled in the use of the cystoscope. It is easy enough to recognise gross changes and to see a calculus, but to pronounce from the appearance of the ureteric orifice one or other kidney in a sufficiently morbid state as to demand its removal requires more than a casual acquaintance with this mode of examination.

The diagnostic value of cystoscopy can hardly be exaggerated in renal and vesical tuberculosis. Without the information afforded by this method more than one operation referred to in these lectures would have been delayed or abandoned. The cystoscope, in fact, has become as essential in investigating diseases of the kidney and bladder as the ophthalmoscope in diseases of the fundus oculi and brain or the laryngoscope in diseases of the larynx. Though not the only method of determining the condition of the kidneys it seems to be the most satisfactory. When I look at my nephrectomies, in the "nineties," for instance, and even up to 1905, the routine practice was to ascertain by opening the abdomen the condition of the opposite kidney. Before I had decided for myself to put aside the abdominal route it was very convenient to explore through the incisions made for nephrectomy. When the loin route was decided upon it became my routine practice to make an opening through the opposite rectus and examine the kidney. In one instance bilateral cystic disease was found, only one kidney giving clinical evidence of enlargement. In another a horseshoe organ was found and operation abandoned in both. I do not mean that in every case such exploration was necessary. When, for instance, the kidney formed a large tumour containing pus, and clinically it was pretty clear that it secreted little or no urine, the abdominal exploration was dispensed with. When the cystoscopic examination cannot be made by an expert, abdominal exploration still remains the best means of obtaining the requisite knowledge. There are conditions, too, where the cystoscopic appearances must be doubtful, or even misleading, as in Case 4 reported in these lectures, where the ureteric orifice gave no indication that the kidney was tuberculous. Yet the ureter and kidney must have been diseased in October when the second examination was made, for the appearances of the kidney when removed in November showed advanced tuberculosis.

In the Roentgen rays, again, we have a method that may guide us as to the condition of the opposite kidney in tuberculosis. A man, aged 37 years, under my care in Guy's Hospital, in 1906 complained of pain in the right kidney suggestive of calculus, supported by the presence of pus in the urine. There had been a history of pain in the left side some years before and it was possible that the kidney was destroyed. The x rays showed a large shadow on the left side only—i.e., the painless side—and the case suggested a reno-reflex pain. On opening this loin a hard calcareous mass was found, being the relic of a kidney shrunk to half its size. After dividing a thin and wasted ureter the relic of this kidney came away without ligaturing or dividing any vessels; they had completely atrophied. Unfortunately, a cystoscopic examination was not made. This man is now ill with tuberculosis of the remaining kidney. My experience is not sufficient to say how far the cystoscope would have guided the operative treatment in such a case. To be complete such an examination should have negatived all surgical interference, for the man suffered no inconvenience from the cretaceous kidney. The right-sided pain was due, no doubt, to tuberculous disease.

TREATMENT.

In reviewing the treatment of the cases referred to it will be seen that the kidney was removed in each instance. The appearance presented by the kidneys will, I think, be admitted to have fully justified the course adopted. Moreover, the speedy recovery of the patients, where the disease

was still limited, and the marked improvement in others, still further support the operative treatment.

Nephrectomy in tuberculosis may be considered as a primary or a secondary operation. In general a patient can bear removal, a preliminary nephrotomy being used for those cases too ill to bear the full operation and for those where it is not possible to estimate the secreting value of the opposite kidney with accuracy. In advocating early nephrectomy so soon as destructive disease has been recognised, either by the usual clinical evidence or by the use of these newer methods referred to, certain questions arise, answers to which are afforded by the cases related in the first lecture.

Is tuberculosis of the bladder a contra-indication to nephrectomy? The answer lies in the reply given by the cystoscope as to the distribution of the vesical infection. When the disease is situated round the ureteric orifice of the affected side, the other appearing normal, and a clear efflux is visible, removal of the kidney is clearly the right practice. In Case 1 with fairly extensive vesical infection complete recovery has followed nephrectomy, and in Case 4, where the tuberculous infection was some distance from the ureteric orifice, there is every prospect of complete recovery. Looking to the recoverability of vesical tubercle I see no objection to nephrectomy, even with multiple foci in the bladder, provided one kidney is healthy, or at least so far as can be discovered. It is obviously difficult to be quite sure on this point, seeing that miliary tuberculosis is painless and that the changes in the ureteric orifice do not occur, as far as I am aware, till the ureter is involved. If examination with the cystoscope is not available prolonged vesical and urethral irritation with painful micturition must not be taken as proof of vesical tubercle. These symptoms may indicate ureteral infection only.

Does slight disease of the other kidney—an amount indicated by a few bacilli and a little albumin in the urine collected from this side—contra-indicate nephrectomy where the other is obviously tuberculous? Two main considerations arise here—the distress caused by the obviously affected kidney and the curability of renal tuberculosis. When one kidney is practically destroyed and contributing little urine, is causing pain, and disturbing the rest, its removal is surely justifiable. If both kidneys are enlarged then operation is out of the question. If renal tuberculosis, taken in the early stages, is recoverable, then the removal of a cause depreciating the general health must contribute to recovery. On this view nephrectomy comes under the general question of the surgery of generalised tubercle where removal of a suppurating focus promotes recovery in others, as for example, amputation of a tuberculous knee for the relief of pulmonary disease. Again, the removal of further infection is obviously a sound practice and indeed is essential if the other kidney is to recover at all. There is therefore it seems to me good reason for removing an obviously tuberculous kidney, causing local and general symptoms, even when the other kidney is infected, but in an early stage, provided also that the general condition of the patient justifies such a course. If the ureteric orifice of the sounder kidney indicated disease of the ureter then any operation, except perhaps nephrotomy, for the relief of pain, would be out of the question.

Ureterectomy.—The next important question is as to whether the ureter should be removed at the time of the nephrectomy or later, or left altogether. To leave a tuberculous ureter seems at first sight to be illogical and as likely to determine further infection. Looking to the cases recorded in the first lecture it will be seen, however, that complete recovery of a tuberculous ureter may take place after the kidney has been removed. In Case 1, with coincident bladder infection, the ureter was not removed as a primary step with the kidney in order not to prolong the operation and the narcosis, seeing that in the recent attack of renal colic the urine had been scanty. This young lady is apparently quite well and is certainly free from all signs of ureteral or vesical tubercle. In Case 2 an opportunity was obtained of examining the ureter nine months after the nephrectomy. Here the ureter was removed to relieve the loin sinus, to which, however, it did not contribute, for the upper end was closed. The ureter was still thicker than normal but not nearly so large as at the time of the nephrectomy. The microscopical section showed remnants of a tuberculous process quite distinctly but no active changes. The slight hectic temperature, to relieve which the ureterectomy was performed, was unaffected by its removal. Though in itself harmless it is quite possible that such a ureter might set up infection in the lymph glands. On the other hand, there are cases where the ureter is the cause of persistent symptoms. In Case 5 the ureter was found large and rigid and was left. Persistent vesical irritation suggested tuberculosis of the bladder or of the remaining kidney. Removal of the ureter was followed by complete recovery. This was done in 1898 and the patient is still enjoying the best of health. The ureter shows dilatation of the channel, with suppuration and thickening of the wall. In Case 3 the ureter was removed at the same time as the kidney, and recovery was more rapid than in most of the others. In this case urethral irritation was the only symptom complained of, and I am inclined to think might have persisted had the ureter not been removed.

While, therefore, it may be said to be established that a tuberculous ureter may recover, and mostly does recover, I am myself inclined to the view that the better practice is to remove it, if possible, at the same time as the kidney. It is particularly desirable to do so when there is coincident disease of the bladder and when the ureter is found to be enlarged and rigid. Where the wall is less diseased and retains its supple characters spontaneous recovery is more certain to occur. In conclusion, while advocating coincident removal of the ureter as calculated to promote more rapid recovery it must be admitted that ureterectomy is not essential to ultimate recovery, and that it must be postponed for further consideration whenever the additional strain on the patient might be injurious. As regards the removal it need not prolong the operation to any serious extent if performed as I suggest.

Removal of the ureter.—A few particulars may not be out of place with regard to this matter. The incision is best made so as to separate the muscles below the anterior superior spinous process, as in the operation for appendectomy. The peritoneum is raised and with it goes the ureter, so that this structure must be sought on the anterior wall of the cavity and close to the spine. Being thickened, it can as a rule be easily felt, and indeed is not difficult to find when normal. When removal follows immediately upon nephrectomy great assistance is obtained by pulling upon the lumbar end, the tight band being recognised at once. Later the ureter is drawn tight by the lumbar scar, lies nearer the spine, and may cost a little time in the finding. The best plan of dealing with the ureter is after separating it down to the bladder to open the channel by an incision going half way through the wall. The vesical end is now curetted and rubbed with pure carbolic acid, the undivided half thus being used to keep the parts in view. Then a catgut ligature is applied and the division completed. I have usually inserted a small rubber drain surrounded with a layer of gauze, but this is, I believe, unnecessary if the end be dealt with as above described. In secondary ureterectomy if there be a loin sinus this should be enlarged and the end detached by the finger working with that from below. If the loin incision has closed, I think it a better practice to reopen this region than to divide the muscles in front, as a stronger abdominal wall results.

What position should incision and drainage occupy in the treatment of renal tuberculosis? It may be necessary to make a preliminary nephrotomy, either because the patient is too ill to bear removal or to make more certain as to the secreting value of the opposite kidney. The value of this measure was well illustrated by Case 5, where the general infection with rigors, &c., was relieved by drainage, making a subsequent nephrectomy almost free from anxiety. In Case 4 the question was important, for here there was sudden enlargement of the kidney with escape of pus into the bladder, hectic fever, and rapid decline of the general health. However, as these symptoms were of short duration the full operation was carried out.

When uncertainty exists as to the value of the opposite kidney preliminary nephrotomy will afford much information, especially in those cases where the ureter is not obstructed. When the destruction is found to be extensive extirpation can be carried out at once, but where there is uncertainty the removal may be postponed and the comparative values of the kidneys ascertained by collecting the urine from the loin and the bladder. If the general condition does not improve we may have to rest content with nephrotomy leaving a loin sinus. If, however, as is more often the case, improvement results, how soon may the kidney be removed? That there is no immediate hurry from the fear of vesical infection is well shown by Case 5, in which the kidney was

removed five months after incision and drainage, and yet complete recovery ensued. The time for nephrectomy has arrived when the general condition has improved and one is satisfied as to the adequacy of the opposite kidney.

Is it possible to excise a tuberculous focus if recognised sufficiently early? This, I believe, has been done, though I have no reference to the cases. In favour of this being accomplished I would refer to Case 1 as typical of the common site of early deposit—viz., in the lower pole, and to the obvious limitation of the disease for some time. Though the specimen shows extensive miliary infection of the lower third it is all fairly recent and suggests that had the condition been recognised at the time of the first attack of pain two years before, excision of the focus might have been carried out. A skiagram taken of this case three months before nephrectomy, showed an opacity in that part of the kidney where the focus was found, so that there is every reason to expect further guidance from this method of investigation. To be successful the ureter must, I expect, be free from infection, for though it recovers after nephrectomy it remains to be seen whether this will happen while urine continues to pass along the channel. The after treatment by tuberculin was carried out persistently in Case 1 from February to December, 1907, and was followed by complete disappearance of symptoms and of bacilli from the urine, and one may conclude by cure of the tuberculosis of the bladder and ureter. The opsonic index chart made by Dr. Eyre shows a persisting high index nearly all the time. In Case 3 tuberculin was not employed after the operation, partly because the ureter had been removed as well and partly because recovery progressed so satisfactorily. In Case 4 the unknown tuberculous kidney probably determined the failure of the tuberculin. The index in this case was often low. The treatment is still proceeding and the patient is gaining ground. There can be no doubt as to the value of this method of treatment, especially for vesical tuberculosis, and there seems no reason why it should not be valuable in early renal disease, especially when tubercle bacilli are found in the urine without vesical irritation. Where, as in miliary renal tuberculosis, the ureteric orifices are normal and there is no unilateral pain, it remains, together with hygienic measures, the only and best curative agent.

The object of these two lectures has been to review a personal experience in the light of the newer methods of diagnosis without going into the whole question or into statistics. To myself the importance of some of the early signs of tubercle has certainly only of late become recognised and I trust these lectures may be of service to others, especially those in general practice. I have related cases somewhat fully, giving at least all essential points in order that those who hear or read these lectures may be able to form their own opinions on the treatment adopted and on the suggestions put forward.

The early recognition of renal tuberculosis and the radical treatment by nephrectomy become of great importance, according as to whether it is held that such disease is recoverable or not. By recovery is meant cicatrisation of a focus, leaving the greater part of the kidney healthy; not disappearance of symptoms by total destruction of the kidney. The pathology of tubercle, especially as seen in the lung, would lead us to expect that spontaneous recovery of limited foci may take place. In the early stages there are no local symptoms of disease, nor in many cases is there ill-health. It is by the routine examination for bacilli in urine containing small amounts of pus and albumin that the earlier stages will be recognised. At this stage, when it may not be possible to localise the incidence of the infection by cystoscopic or other means, treatment by hygienic methods and by tuberculin hold out great prospects of success. As already mentioned I have little doubt that many cases of slight albuminuria, treated with success, have been examples of tubercle. There seems to be no reason why spontaneous cicatrisation of tuberculous lesions should not occur in the kidney as in other organs.

When, however, renal tuberculosis has advanced so far as to determine local symptoms, as pain, vesical irritation, a lumbar tumour, or gives rise to marked pyuria and albuminuria, is there any prospect of recovery with preservation of more or less healthy renal substance? I am not in a position to answer my own question, for the evidence from the post-mortem room is not in my possession, but I am inclined to think the information available is scanty, if existing at all. Perhaps this question may cause more attention to be paid to the subject and bring forward the pathological facts on which alone sound treatment can be based. In this connexion I would again refer to the specimen removed from Case 2. It exhibits cicatrisation in the lower pole of the kidney, the miliary infection being apparently quite recent. When local symptoms have developed the probability is that a progressive destruction of the kidney has set in and that no good will come of delay. That this destructive process may go on either steadily, with comparatively little general disturbance, or be interrupted by brief periods of acute illness, as in Case 1, seems no justification for a purely expectant treatment. If the outcome is to be a final destruction of the organ the rational treatment, it seems to me, is to cut short the illness by removal as soon as progressive disease has been recognised. To base a reason for delay upon the well-known unilateral character of the disease and the long resistance of the bladder and kidney to infection is to lose sight both of the fact that recovery means the final destruction of the kidney itself and of those cases where the spread of infection can be traced from one kidney to the other.

On every ground then early nephrectomy is indicated as soon as the destructive process has been localised and this may be on the first visit of a patient who has retained his weight and working power up to that moment. When a kidney shows so much healthy tissue as that removed from Case 1 a sense of regret at the sacrifice must be experienced. A close examination shows, however, wide miliary infection of the lower end, an amount of disease that could not be excised and would not have recovered spontaneously. Moreover, the ureter was tuberculous. The best guide to nephrectomy in the absence of a renal tumour or profuse pyuria is the cystoscope, and my experience teaches that when the ureteric orifice shows characteristic changes renal disease is beyond recovery and the sooner the organ is removed the better.

OBSERVATIONS ON THE OPSONINS, WITH SPECIAL REGARD TO LUPUS VULGARIS.

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PART I.

AMONG all the modern investigations on immunity perhaps no one deserves so much attention as Sir A. E. Wright's doctrine of opsonins. If this doctrine is shown to be correct every medical man who has a laboratory at his disposal will be in a much better position than before to treat many chronic infectious diseases against which the clinicians were previously more or less helpless.

Recognising the immense importance of this doctrine the Finsen Light Institute at Copenhagen decided to make the opsonic doctrine and especially the opsonins in cases of lupus vulgaris the object of a lengthy series of investigations. These investigations, which in our hands have not led to any practical result, are presented here, as we think that our experiences may form a link in the present investigations on the opsonins and their clinical value. We tried to find out if it were possible by tuberculin therapy guided by opsonic estimations to produce such an effect on patients suffering from lupus that the disease would either disappear or be relieved, light or x-rays being also sometimes used in the treatment. We divided the work between us in such a way that Dr. Reyn had charge of all the clinical investigations (examinations of the patients, injections of T.R., &c.), while Dr. Kjer-Petersen did all the laboratory work—namely, the estimation of the opsonic index.

I.—*The Opsonic Index.*

Before proceeding to the detailed account of our investigations we have to offer some criticisms on two assumptions which seem to be very important with regard to the opsonic doctrine. The first assumption is that phagocytosis is the most important or at least a very essential link in the resistance of the organism against infection. We know that

bacteria are "picked up" by the leucocytes, but it seems never to have been proved that this process is *always* pernicious to the bacteria. It cannot be denied—what is emphasised by several authors—that the rôle of phagocytosis as a factor of immunity is still without clinical confirmation. The next assumption is that experiments on phagocytosis made *in vitro* are adequate expressions of the phagocytic processes in the organism. It is said, for instance, that the more virulent the bacteria are in the organism the more the leucocytes decline to take them up. But the opsonic doctrine does not in any way pay attention to the virulence of the bacteria.

We will now discuss the value of the estimations of the opsonic index. At our disposal we have a series of tuberculo-opsonic indices, measured both on healthy persons and on patients suffering from lupus. These estimations were made from Jan. 21st to July 16th, 1907. After this date we estimated no opsonic index but still continued the inoculations with T.R.

We arranged our experiments in the following way. The blood was as a rule withdrawn between 10 A.M. and 12 noon. The slides were "put up" some hours later. The next day they were counted by one of the assistants of the laboratory, Mrs. Maar, who had been trained for a month in the counting. All the slides with the exception of those from two days were counted by Mrs. Maar. When once counted a slide was never counted over again even if the result seemed to us to be ever so unlikely. Before Mrs. Maar received the slides we always mixed slides from patients with others from healthy persons in such a way that she never knew to whom the slides which she was counting belonged. This was done in order to avoid the immensely great risk of self-suggestion in estimating the opsonic index which no counter can get rid of if he or she knows to whom the slide which is being counted belongs.

It is known that Sir A. E. Wright is accustomed to "pool" the serum from several persons and in this pooled serum to count 100 leucocytes, which count he then reckons as unity. We have not done this, as it did not seem to us sufficiently exact; instead of this we reckoned as unity the average phagocytic count of, usually six, healthy persons—i.e., we used six healthy sera and counted in each the number of bacteria contained in 100 leucocytes, which is, of course, equivalent to the number of bacteria contained in 600 leucocytes. The resulting number of bacteria divided by 6 was taken as unity, for we always counted 100 leucocytes in each slide of blood obtained either from a patient or a healthy person. We did this in order to get exactness as far as possible. We also in some cases pooled the six sera after the manner of Sir A. E. Wright, and in this table we see in the first column the phagocytic count in 100 leucocytes of the pooled serum of six persons and in the second the phagocytic count in 600 leucocytes divided by 6.

I.	II.	I.	II.	I.	II.
221...	170	246...	244	206...	209
194...	110	176...	140	174...	192
141...	121	158...	157	145...	133
211...	143	144...	203	228...	255
186...	224	151...	260	361...	316
195...	229	218...	169	199...	214
212...	218	172...	149	224...	193
151...	152	272...	317	244...	334
154...	159	140...	145	138...	161
377...	242	221...	247	178...	246
212...	198	141...	123	97...	95

Of course, Column I. ought to correspond to Column II., but as we saw that it was not the case we chose the more difficult estimation of the 600 leucocytes as being more exact. As an average the content of tubercle bacilli in each leucocyte was from 2 to 4.

It seems quite clear that the basis of the use of opsonic index determinations must be the exactness with which the opsonic index is determined in healthy persons. This "opsonic index of the healthy" has exactly the same value as any other unit of measurement.

Here where we are speaking about exactness we wish to emphasise that the opsonic doctrine is a doctrine of numerical observations. Numbers can only be judged scientifically in accordance with the "theory of observation" (law of error). With regard to this theory, referring to the special authors,[1] we only wish to call to the mind three chief points which may hereafter be of some use to us.

1. If we have two groups of homogeneous observations and if we wish to know with what exactness the observations are made, it is necessary not only to determine the mean of each group but also the "mean error."[2] The mean in itself gives no idea of the exactness. This is easy to be seen from the following example. If an observer examines a serum six times, and each time finds the index to be 1·00, the mean of the six indices is 1·00. If another observer examines the same serum also six times and finds the indices to be 1·4, 1·2, 1·0, 1·0, 0·8, 0·6, the mean is also 1·00, but the exactness is far less (i.e., the mean error is greater). As it is not possible to use the mean as a measure of the exactness it is also impossible to use the "extreme limits" ("the greatest variations" between the indices of series of observations) as a measure of exactness. Suppose we have two series of observations of the same exactness, one with 10 observations, the other with 1000 observations. Then there will be in the last series more higher and lower results than in the first series with only 10 observations. By estimating the exactness by "the greatest variation" the last series would seem to be of a less value than the first, in spite of the fact that the exactness of the two series is the same.

2. Where an observer has a mean of a series of observations which are repetitions (observations in which many disturbing causes unknown to the observer and of small individual effect neutralise one another in the mass) he is only absolutely sure that a new observation is influenced by a predominant cause (for instance, in our examination T.R.) if this observation deviates from the mean more than four times the mean error (in the positive or the negative direction).

3. A series of observations will distribute themselves in a typical way according to the law of error. The distribution is as follows: (mean error = μ in percentage of mean): within a distance in positive or negative direction of—

$\frac{1}{2}\mu$ from the mean fall	383 pro mille
1μ " " " "	683 " "
2μ " " " "	954 " "
3μ " " " "	997 " "
4μ " " " "	999·34 "

We have 673 times determined the tuberculo-opsonic index of healthy adults—219 times from 15 healthy men and 454 times from 33 healthy women. We found that the mean of these 673 indices was 1·00,[3] and that the mean error of the individual estimation was 0·19. If the healthy persons have a constant index this mean error (0·19) is like the mean error of the measure method. If the indices of the healthy persons are not constant this mean error comprehends as well the error by the measuring as the error depending on the not constant indices. The mean error of the measure method (i.e., how exact it is possible to estimate on the whole the indices) has only a theoretical interest. The mean error that also pays regard to the possible variations in the indices of the healthy person has the practical interest. As our investigations covered a period of five months, and as it, *a priori*, is likely that the exactness grows with the time (i.e., with the greater experience), we have divided these indices into four groups, each of 30 days. At the same time we have distinguished between males and females.

TABLE I. (*Males*).

Period.	Number of opsonic indices.	Mean.	Mean error.	μ in percent. of mean.
I.—Jan. 21st to Feb. 24th ...	47	1·04	0·23	0 22
II.—Feb. 25th ,, April 8th ...	97	0·97	0·19	0·20
III.—April 9th ,, May 18th ...	47	0·98	0·16	0·16
IV.—May 21st ,, July 16th ...	28	1·01	0·16	0·16

TABLE II. (*Females*).

I.—Jan. 21st to Feb. 24th ...	80	0 99	0·23	0 23
II.—Feb. 25th ,, April 8th ...	108	1·04	0·18	0·17
III.—April 9th ,, May 18th ...	135	1·00	0·17	0·17
IV.—May 21st ,, July 16th ...	131	1·00	0·17	0·17

[1] Bowley: Elements of Statistics, p. 261, London, 1901. (The book requires a good deal of mathematical knowledge.) Herman Olsen in Brauer's Beiträge zur Klinik der Tuberculose, I. Supplementband, p. 24–35, gives a quite popular sketch of the chief points of the law of error.

[2] Bowley calls it "error of mean square" or "standard deviation," loc. cit., p. 285.

[3] That the mean index of healthy people is 1·00 is a simple consequence of the way in which the unity is estimated.

It is seen from these two tables that we in the first period worked with a smaller exactness than later. Further, it is clear that there is no essential difference between the two sexes.

We wish now to see how these indices from healthy people correspond with the above-named law of error. In Table III. (where the number in the parentheses indicates the number calculated according to the law of error) we see the distribution.

TABLE III.

Within $\frac{1}{2}\mu$	...	(0·90–1·08) : 268 = 39·8 per cent.	(38·3 per cent.).
,, 1μ	...	(0·81–1·19) : 489 = 72·4 ,,	(68·3 ,,).
,, 2μ	...	(0·62–1·38) : 643 = 95·5 ,,	(95·4 ,,).
,, 3μ	...	(0·43–1·57) : 669 = 99·4 ,,	(99·7 ,,).
,, 4μ	...	(0·24–1·76) : 673 = 100 ,,	(99·994 ,,).

The nice correspondence is here evident and suggests that none of the observations have been influenced by a predominant cause, but only by the small individual causes which neutralise each other.

If we now inquire how the question about the exactness is answered by the different authors we at once meet with two difficulties. The one is that the authors never use this law of error already mentioned; the other is that they do not always state the exact arrangement of their investigations (for instance, whether they count 50 or more leucocytes, whether they use pooled serum or not, &c.). Many authors believe that Dr. William Bulloch[4] is right when he states that the tuberculo-opsonic index of healthy persons lies between 0·80 and 1·20. Even if this were correct it seems clear that not all observers are allowed to use the limits stated by Dr. Bulloch as limits to their own indices. The opsonic technique is a difficult one and *a priori* it is very unlikely that everybody at once can work with the same degree of exactness as Dr. Bulloch. In order that the determinations made by another observer may be of any value he must convince others, or at least himself, that he works with the same exactness as Dr. Bulloch. We also find in the literature of the subject the most different opinions with regard to the value of the opsonic index of persons in good health. Dr. Bulloch quotes Dr. R. H. Urwick—with what right we are going to see—as an author whose indices "correspond closely" with his own. In a paper by Potter[5] the indices of healthy people seem to be like those of Bulloch, but in a recent paper[6] Potter writes that the variations of the opsonic index are very great. W. Jensen[7] seems to believe that his own serum always has the index = 1. On the other side we find communications on higher indices. North[8] has found variations from 25 per cent. to 200 per cent. Dr. David Lawson and Dr. Ian S. Stewart[9] examining the blood of 25 healthy persons found opsonic indices of 1·40 in one person, 1·20 in five, 1·10 in five, 1·00 in seven, and 0·90 in seven.

It is clear that all examinations regarding the determinations of the indices of healthy persons (i.e., the estimation of the unity) in the hand of the individual observer must be made without the influence of any predominant cause (i.e., on a homogeneous material). We saw above that if an essential condition changed during the observations these would not become repetitions, and the numbers would not in that case correspond to the law of error. Such an example we have in Bulloch's series of 66 healthy indices. We find (the number in the parentheses indicating the number calculated according to the law of error)—

Within $\frac{1}{2}\mu$	... ...	62·1 per cent.	(38·3 per cent.).
,, 1μ	... ...	80·3 ,,	(68·3 ,,).
,, 2μ	... ...	92·4 ,,	(95·4 ,,).
,, 3μ	... ...	100 ,,	(99·9 ,,).

We see that Bulloch within $\frac{1}{2}\mu$ nearly has the double amount of the calculated (62·1 instead of 38·3). It is also very easy to understand by looking on his indices, where 26 (i.e., one-third of his whole material) have the value 1·00 in spite of the fact that between 0·80 and 1·20 there are 41 different values which the indices might have. In one way or the other a predominant change has been introduced in his experiments and therefore his indices lose their value as a basis for the estimation of the healthy index (i.e., the unity). Moreover, it seems strange that Bulloch never obtains indices higher than 1·20 or lower than 0·80. He uses his own serum as control. His serum must therefore on some day or other have an index = 0·80. If he now by chance on this particular day examined a normal person whose serum had the index = 1·20 this normal person's index would work out as $\frac{1·20}{0·80} = 1·50$.

We have seen above that in our 673 healthy persons we found a mean of 1·00 and a mean error = 0·19. It might be of interest to estimate the same figures for some other authors. Bulloch:—(34 healthy males) mean = 0·97, mean error = 0·07; (32 healthy females) mean = 0·97, mean error = 0·09. Urwick: (20 healthy persons) mean = 1·006, mean error = 0·11. Lawson and Stewart: (25 healthy persons) mean = 1·05, mean error = 0·13. Shaw: (seven healthy persons) mean = 0·98, mean error = 0·19. Bulloch seems, therefore, not to be justified in saying that he counts with the same exactness as Urwick; neither does the exactness of Lawson and Stewart seem to be exactly like Bulloch's. Our estimation of Dr. C. J. Shaw's mean error is only approximate, as he does not state all his indices. But as most of the authors have the same wrong view as to the way in which to state the exactness of their method it is worth while to quote him verbatim:[10]

> The average tuberculo-opsonic index of the six healthy control cases for five consecutive days was 1·07, the average for each case being 0·98, 0·97, 1·32, 1·06, 1·01, and 1·11, showing a variation between 0·97 and 1·32. This average index agrees with the results obtained by other observers in healthy persons.
>
> Urwick, in 20 cases, found the average index to be 1·006, while Bulloch in 84 cases found an index of 0·96, and in Lawson and Stewart's 25 cases the average was 1. The total variation 0·35 is less than that found by Bulloch in the 84 cases he examined. Urwick states that there is little variation in the index of a healthy person from day to day. I found considerable daily variations in some cases, though the observations were made as far as possible under the same conditions. The greatest amount of variation recorded between two consecutive observations was 0·3. In one control case, however, a record so low as 0·68 was obtained on one occasion.

The author just named uses the average (the mean) and the greatest variation as an indicator of his exactness, which, as we saw above, is quite wrong. Considering that this is the way in which most of the authors judge their exactness most people will agree that this fundamental question in the opsonic doctrine rests on a weak foundation. Until other authors determine their exactness in the same way in which we have done it (i.e., from a sufficiently great amount of material and taking regard to the law of error) it might perhaps be an open question if their fault is not as great as ours.

We now leave the opsonic indices of healthy persons and proceed to examine the indices of the lupus patients in the same way.

For the purpose of getting a general view we want to see what answer our material gives to the following questions. 1. How great is the tuberculo-opsonic index of lupus patients not treated with T.R.? 2. Does the treatment with T.R. produce a rise of the index curves *in toto* and a fall (the negative phase) after the individual injection? 3. Is it possible to use the indices as a guide to our treatment of lupus patients with T.R.?

Our material consists of 408 opsonic indices from adult lupus patients (23 males and 92 females) who either had not been treated with T.R. at all or at least had not yet had it at the time when these indices were determined. Some of these indices are to be found in the curves given in this article. We have also 551 opsonic indices from patients treated with T.R.; all these are to be found in the curves.

1. The 408 opsonic indices from lupus patients who have not had T.R. show a mean = 1·03 and a mean error = 0·25. The distribution is—

Within $\frac{1}{2}\mu$	...	(0·90–1·16) : 177 = 43·4 per cent.	(38·3 per cent.).
,, 1μ	...	(0·77–1·29) : 298 = 73·0 ,,	(68·8 ,,).
,, μ	...	(0·51–1·55) : 393 = 96·3 ,,	(95·5 ,,).
,, 3μ	...	(0·25–1·81) : 405 = 99·3 ,,	(99·7 ,,).
,, 4μ	...	(0·02–2·07) : 407 = 99·8 ,,	(99·9 ,,).

The typical distribution is not quite as good (too many cases within $\frac{1}{2}\mu$ and 1μ and 1 index outside 4μ) as in healthy persons, among whom we (as stated above) found a mean opsonic index = 1·00 and a mean error = 0·19, but still the figures go far enough to show that there is in our cases no essential difference between healthy persons and lupus patients. This is a very important fact as one of the chief points in Wright's theory is that the serum of tuberculous patients has a specific action, which in localised

[4] Transactions of the Pathological Society, vol. lvi., Part III., 1905, p. 339.

[5] Journal of the American Medical Association, 1906.

[6] New York Medical Journal, 1907, p. 1148.

[7] Congrès International de la Tuberculose, 1905.

[8] New York Medical Journal, 1907, p. 1148.

[9] THE LANCET, Dec. 9th, 1905, p. 1679.

[10] THE LANCET, May 11th, 1907, p. 1287.

tuberculosis tends to lower the index. We have not found such a specific serum in lupus patients and this brings us to put the question, *Is there any such specificity at all?* or would the ratio between the two sera—normal or pathological—always work out like $\frac{1{\cdot}00}{1{\cdot}00}$ if they were counted with sufficient exactness?

2. As far as we know there does not exist any curve of immunity based on *daily* index estimations for one or more weeks before the first inoculation and *daily* index estimations after the beginning of the inoculation as long as this is continued. The reason why Sir A. E. Wright has not made such a curve is probably because his clinical material consists of out-patients attending a polyclinic; patients of this description, however, are not suitable for such examinations. This may also be the reason why he has not examined whether, and if so how much, the phagocytic power, when the curve is taken *in toto* (the "positive" and "negative" phases added), has risen. Commonly the authors of articles on the subject are content with speaking about the "positive" and "negative" phases.

We will now examine our material with regard to the question of the influence of T.R. on the curves *in toto* and we will use for this purpose the patients whose indices are shown in the accompanying curves. The arrows in the curves indicate the day of injection. We have always used new tuberculin (Koch) T.R. and the fractions indicate fractions of one milligramme T.R. The curves of the ten patients which we can use are the Curves 1–10.[11] In one case (Curve 1) the patient had received a single T.R. injection one and a half months before the first inoculation. Curve No. 11 (i.e., Case 1) cannot be used in this examination, as the indices of this patient were not determined before the first injection. We wish to state explicitly that none of these patients suffered from pulmonary tuberculosis. A glance at the accompanying curves and Table IV. will make it clear that the conditions in the individual cases are so different that it is necessary to treat the whole material summarily in order to get a decisive answer.

TABLE IV.

No.	Number of opsonic index before first inoculation.	Number of opsonic index after first inoculation.	Mean before first inoculation.	Mean error before first inoculation.	Mean after first inoculation.	Mean error after first inoculation.
1	7	34	0·97	0·14	1·01	0·24
2	16	80	1·08	0·28	1·01	0·24
3	15	79	0·99	0·26	1·03	0·24
4	16	76	1·05	0·30	1·16	0·29
5	16	79	1·25	0·48	1·21	0·30
6	16	84	1·17	0·31	1·04	0·24
7	16	23	1·12	0·27	1·20	0·25
8	16	12	0·93	0·18	1·17	0·34
9	8	75	1·00	0·16	1·03	0·21
10	10	9	0·84	0·33	0·96	0·32
11	0	44	—	—	1·01	0·23

We find then by looking at these curves before and after the first T.R injection that the mean opsonic index and the mean error are on the average 1·06 and 0·29 before the injection, whereas after the injection they are respectively 1·08 and 0·28. Apparently, no conclusion can be drawn from these figures. Still it must be taken into consideration that the mean opsonic index 1·06 is derived from only 136 observations and therefore is not so exact as the mean opsonic index 1·08 derived from 551 observations. Further, the result 1·06 dates from the first period where the exactness was the least, while 1·08 originates from the last three periods. If we now instead of 1·06 use 1·03, which we found above to be the mean of 408 indices from lupus patients not treated with T.R., the following question suggests itself: Is the difference between 1·03 and 1·08 so great that it can be correctly described as a rise? It can be calculated mathematically [12] that there is a probability of 995 against 5 that there is a rise.

Concerning the question of the "negative phase" a glance at the curves will show days on which the opsonic indices after injection of T.R. are sometimes lower and sometimes higher than the index before the injection. No general rule is to be found. We are therefore obliged to treat also this question summarily, choosing from the curves such injections of T.R. as are made between two immediately consecutive index estimations. In other words, the indices which we use were determined on two consecutive days, and directly after the blood was taken for the first index estimation the T.R. injection was given. We have 36 such injections and we will now compare the sum of the 36 opsonic indices before the injection with the sum of the 36 opsonic indices after the injection, and get in this way an expression of the effect of T.R 24 hours after the T.R. injection.

The mean of 36 indices before injection = 1·08.
" " " after " = 0·99.

Mathematically, it can be calculated that the probability of a fall is 5 against 1, and with this probability our material then seems to prove the "negative phase."

3. We have seen that our examination may serve to prove the truth of Sir A. E. Wright's doctrine of the rise and fall after T.R. if we treat it summarily. On the other side, we must say that the index estimations have been of no help at all for the treatment of our patients. Where we have faced the individual case the effect of T.R. on the opsonic index has been so uncertain that the indices have been of no practical value to us at all.

When we now at last compare our result with those which we find in the literature at our disposal it will be seen that in important points we are of a different opinion. Bulloch found from 150 opsonic indices of 150 patients suffering from lupus a mean = 0·75. We found no difference between healthy persons and lupus patients. With regard to some of these 150 indices Bulloch found that cases with an index below 0·7 were not benefited by the Finsen treatment, while on the other side cases with an index higher than 0·9 were cured by the light treatment. We have divided our patients—as far as we have been able to judge the course of the disease—into two groups like the two just-named groups of Bulloch. In both groups we found an average index = 1·00. Bulloch and many with him think they may make use of one single index estimation and conclude from it with regard to the condition of the patients. Bulloch says that an index below 0·8 is rare or pathological. Many agree with him or put the limits at 0·7. But they do not pay any attention to the above-named law of error which asserts that it is not safe to draw any conclusion where there is not a difference greater than four times the mean error of the mean in the positive or the negative direction. This means that if Bulloch always worked with the same mean error (0·07) the limits would be 1·25 and 0·69—namely, $0{\cdot}97 \pm (4 \times 0{\cdot}07)$. Only outside these limits he is quite sure that an index is pathological. With regard to Lawson and Stewart, for instance, the limits would be 1·62 and 0·53—namely, $1{\cdot}05 \pm (4 \times 0{\cdot}13)$. This goes far to show that the one author is not allowed to use the limits of another. The same is the case with regard to the negative phase. When an observer before an injection finds the opsonic index = a and after the injection finds it = b, if b is smaller than a, most authors call it "negative phase" without asking if b is so much smaller than a that such a conclusion is legitimate. The case is exactly the same when the subject in question is a rise in the phagocytic power. As a rule the observer has estimated only one or two opsonic indices before the vaccination and still he speaks about rise without having proved that the indices before the injection—when these indices have been determined over a tolerably long period—are not exactly like the indices after the injection. It must be clearly understood that the necessity for taking the mean error into consideration is the more imperative in proportion as the greatest and smallest tuberculo-opsonic indices are very near 1. If we had met with indices that were from ten to 20 [13] times the normal index one had perhaps been allowed

[11] These ten curves are shown under Cases 2, 3, 4, 5, 6, 8, 12, 13, 14, and 15. There is no systematic connexion between the numbering of the cases and the numbering of the curves. The number of each curve is in every instance shown in the right-hand bottom corner.

[12] Mr. Iversen, a mathematician, has calculated these figures and has kindly gone through the manuscript.

[13] In cerebro-spinal meningitis it is said (Miss Alice Taylor: THE LANCET, July 6th, 1907, p. 16) that indices = 40 (forty) are met with. If this is not caused by an agglutination of the bacterial emulsion by the serum the deviation from the normal (= 1) is here so enormous that a higher or lower degree of exactness is without any significance.

to hope that the deviations were so far from the normal that these indices with certainty fell outside the range of errors, even if the mean error were a little greater or smaller. But now the tuberculo-opsonic index is very seldom twice as great or twice as small as the normal, that is to say, that the observations are so delicate that it seems hopeless to attempt to draw any inference without paying attention to the law of error.

To argue from our examination of the value of the tuberculo-opsonic index to the value of the index estimation might not be altogether fair, because the process of determining the tuberculo-opsonic index seems to be very difficult. Still, a great deal of the sources of errors quoted above keep their validity against other index estimations. And it seems to be a legitimate requirement that in the future this process must be worked with much more conformity of results and much more precision than has been the case hitherto.

A good deal would be gained if all investigators would agree to a systematic procedure the chief points of which for instance might be as follows: (1) the observer who counts a slide shall not be allowed to know to which patient the slide belongs; (2) in all cases the same number of leucocytes shall be counted; (3) the unit index shall always be determined in the same way—namely, by the use of pooled serum from at least six healthy persons and with 600 leucocytes counted; (4) the indices shall be determined to two places of decimals and the exact magnitude of the index shall be named even when the indices are exhibited as curves; (5) conclusions shall be drawn only from curves based on observations in which the indices before the vaccination were determined daily for one or two weeks; (6) the conclusions shall be drawn from a sufficiently great amount of material and shall be in conformity with the law of error; and (7) an opsonic immunity-curve corresponding to each individual bacterial type shall be made as an example. No systematic method of this kind has been adopted up to the present, but instead thereof we find scattered throughout opsonic literature a number of papers which are very incongruous in their foundation and in the value of their material. Until a programme like the one just proposed is generally adopted, and until we (when the investigators follow this programme) have got an undeniable proof of the reality of Sir A. E. Wright's doctrine of the opsonic index, we think it safer to dissuade practitioners from using these very troublesome determinations as a clinical method. We then would have more time to give Sir A. E. Wright's vaccinations a clinical trial to the extent which they require. The fact that a vaccination therapy is very seldom guided by daily index estimations seems to us a silent admission of the possibility of being able to vaccinate without determining the indices.

In concluding this section of our paper Dr. Kjer-Petersen wishes to express his most hearty thanks to Sir A. E. Wright and his assistants, who during Dr. Kjer-Petersen's stay at St. Mary's Hospital taught him the method of making opsonic estimations and most kindly spent much time in furthering the objects which he had in view.

II.—*About the Treatment of Lupus Vulgaris with T.R.*

In addition to these studies on the opsonic index we wish to communicate some cases of lupus vulgaris which we have treated by injection of T.R. according to Sir A. E. Wright's method. First we shall mention what we have been able to find in the literature about the results of this treatment.

Wright[14] publishes two histories of patients suffering from lupus vulgaris in whom great improvement was noticed after injections of T.R., and he furthermore relates that in several cases the results have been good, but he speaks only of one case of permanent cure. When the results have not been better Wright believes it is because the lupus is seated in a skin which is too poorly supplied with blood, so that that its anti-bacterial matters have not been able to act upon the tubercle bacilli. If a sufficiently pronounced hyperæmia of the skin can be provoked, such as is the case by the Finsen treatment, that method might, according to him, be of a much greater value. He therefore proposes to combine injections of T.R. with the Finsen treatment. If we had known these statements by Wright only we should hardly ever have tried the T.R. treatment as *sole treatment* against lupus vulgaris, but from other sides far better results of Wright's method have been related.

Bulloch[15] has, for instance, treated seven patients—all very old and extensive cases—who did not respond either to the treatment with x rays or to the Finsen treatment; four of these recovered, two were greatly improved, while one did not stand the injection with T.R. With regard to these histories we refer to THE LANCET, and we only wish to emphasise that the effect of the short treatment in Bulloch's four apparently cured cases has been astonishingly good. We are sorry to say that we have not been able to find in the literature any records of the later course of these cases which would have been of great interest, especially considering the short time of observation after the treatment and the pronounced tendency of some of the cases to relapse. Generally speaking, it is, in a disease like lupus, not too much to ask that the condition of the patients shall be followed through a longer time if the record is to be of any value.

Graham Little[16] relates one case where the patient's condition became worse, but he thinks that this was due to an overdose of tuberculin.

Butler Harris[17] has treated a very old case of lupus in which the patient quickly got better.

Turton and Parkin[18] relate two extensive cases of lupus which responded to tuberculin "much quicker" than might have been expected under any other treatment.

George Rose[19] has described the cases of two patients improved by Wright's method.

Ebert Hill[20] relates a case of lupus vulgaris of the upper lip which, after having been treated with different ointments, apparently recovered under the use of T.R. With the exception of this last-named case no author—as far as we have been able to discover—seems to have got so good results as Bulloch.

We will now proceed to mention the results which we have got, but at first we wish to go through the principles which we have followed in the treatment of our patients.

Wright recommends his method in such cases as have very low opsonic indices and do not react on, or always relapse after, some other treatment. But, as stated above, we did not find the opsonic index low in our lupus patients; on the contrary, their opsonic indices were, perhaps, just a little higher than in healthy persons. We were therefore compelled in choosing the cases to be guided by the result of earlier treatments, and to select such patients who, though energetic light treatment had been applied, either were not cured or even had become worse; we therefore selected eight of our most malignant cases (clinical histories 1–8 *infra*). As a contrast with these we tried the treatment in three small fresh cases (clinical histories 9–11 *infra*) which—as far as we could judge—would respond to the light treatment, so as to see whether the method, if it failed in the malignant cases, might perhaps be of value in the fresh cases.

Wright uses the opsonic index as a guide in the treatment. We have, as mentioned above, not been able to use the opsonic index for this purpose; we have used the doses and intervals which Wright indicates, and have injected quantities of $\frac{1}{1000}$ or $\frac{1}{2000}$ of a milligramme, increasing to $\frac{1}{250}$ of a milligramme. In a single case we have increased the dose to $\frac{1}{125}$ of a milligramme. The intervals between the injections have been about three weeks, which is the interval Wright uses, as far as we have been able to find out. Only in our first injections the intervals got more occasional as we tried if we could get any support by the opsonic index. We always used Koch's tuberculin (T.R.) sterilised at 60° C.

An account of a series of cases in which the method of treatment is given a full trial follows.

(To be concluded.)

[14] Clinical Journal, November, 1907.
[15] THE LANCET Dec. 2nd, 1905, p. 1603.
[16] British Journal of Dermatology, September 1905.
[17] THE LANCET, Dec. 16th, 1905, p. 1772.
[18] THE LANCET, Oct. 27th, 1906, p. 1130.
[19] THE LANCET, Dec. 22nd, 1906, p. 1726.
[20] The American Journal of the Medical Sciences, vol. cxxxiv., No. 1.

THE "E. M. I." (ETUDES MÉDICALES INTERNATIONALES).—The French railway companies have announced their intention of granting a new facility to the members of the Tour for Post-graduate Study which will be held in Italy from April 12th to 28th. The half-price return tickets to Nice will be available until May 15th in order to give their holders an opportunity of stopping on the Côte d'Azur. Moreover, the Paris-Lyons-Marseilles Company, with its wonted courtesy, will issue passes allowing the journey to be broken between Nice and Marseilles. Entries for the tour must be made before March 29th; communications should be addressed to the office of the "E. M. I.," 8, Rue François-Millet, Paris.

MODERN METHODS OF TREATING INFECTIVE CONDITIONS OF THE THROAT.

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As late medical superintendent of an infectious diseases hospital in which throat conditions of an infective or at least a bacterial character were of everyday occurrence I have for many years been exercised as to the best methods of combating such conditions, both from the curative and preventive points of view. Practice in this matter may be said to consist chiefly in the application of antiseptics by means of gargle, swab, spray, or douche, and practice varies in intensity from the squeamish use of a very mild gargle to the intrepid employment of a strong germicide under an anæsthetic. From both the preventive and curative points of view the annihilation, or at least the inhibition of growth, of the causal organism or organisms in such conditions is obviously the first thing at which to aim.

It is well known that what occurs in the case of true diphtheria bacilli during their growth on the fauces and throat—the formation, absorption, and circulation of toxic products—can also occur in the case of various staphylococci, streptococci, pneumococci, yeasts, and the like. We have not as yet for the latter conditions a mode of attack from within such as we have in the use of diphtheria antitoxin, except the use of antistreptococcic serum which I am of opinion is of decided value in many infective throat diseases. We are therefore compelled to rely upon methods which destroy the local toxin-factory or weaken its operatives so that their output is lessened. This is of especial importance in scarlet fever—a disease which I have long held to be strictly analogous to diphtheria in its pathology, there being a local bacterial factory in the throat from which toxin is distributed throughout the system to produce the secondary manifestations of the disease—lymphadenitis, nephritis, otitis, rheumatism, &c. It appeared to me, therefore, that as complete a test as possible, primarily bacteriological, of the value of the various antiseptics commonly used for the "disinfection" of the throat and of the various methods of applying these antiseptics would be of considerable interest. My first idea for the bacteriological test was to plant artificially some easily recognisable bacillus like the bacillus prodigiosus on the fauces and then to treat it with various solutions and note its diminution or disappearance. But on consulting Professor S. Delépine of the Public Health Laboratory, Manchester, whose kindness to anyone venturing on original investigation is notorious, I found that this had been tried with unsatisfactory results and that not the least objection to it was that it had at times resulted in unpleasant consequences to the subject. Obviously, as was pointed out to me, much more valuable results could be obtained by the observation of the behaviour of some bacterium actually growing on the throat than of some extraneous organism which might find the throat *per se* an undesirable residence. It was accordingly decided that I should endeavour first to find a throat which possessed fairly uniform bacterial contents and for this purpose I took swabs of a few throats for examination by Professor Delépine. The swab, which was of the kind ordinarily used in the diphtheria outfit at the health office, was rubbed gently first over one anterior pillar of the fauces and then over the other; it was then immediately labelled and sent off for examination, care being taken to send none at week-ends or during holidays when the delay would cause multiplication of organisms.

The method adopted by Professor Delépine for the examination of these swabs was to make an emulsion from each one in 5 cubic centimetres of sterile water, and from this to make a further dilution enabling agar plate cultures at 37° C. to be made containing $\frac{1}{10}$th, $\frac{1}{100}$th, $\frac{1}{1000}$th, and $\frac{1}{10000}$th of the whole. The swabs were obtained under as nearly as possible similar conditions. They were not packed in ice to prevent or to lessen multiplication *in transitu*, but as all were sent in precisely the same manner the variations obtained are, I think, fairly attributable to the causes assigned. Care was taken to use the same amount of pressure on the mucosa when using the swabs, for any variation would naturally result in the swab picking up more or fewer bacteria in its journey. Some part of the variation in the results obtained is undoubtedly due to a difference in the amount of pressure employed, a matter naturally most difficult to control. Quantitative bacteriological work is at best an uncertain thing but the results obtained indicate that in these experiments the care taken in collection and examination has not been thrown away. Most of the colonies obtained were those of streptococci and not staphylococci as had been anticipated.

The first throats examined were those of three hospital nurses, in the first of which (Nurse G) I had a month previously excised a portion of one tonsil. All presented apparently normal fauces and the divergent results obtained are probably the consequence of the atmosphere to which they were exposed—that of a scarlet fever ward containing occasionally diphtheria, rhinorrhœa, otorrhœa, cervical abscesses, &c.—the usual accompaniments of scarlet fever.

	Swab No.	Staphylococcus. Aureus.	Staphylococcus. Albus.	Total colonies.
Nurse G...	1	325	0	134,500
	2	75	165	1,320
	3	0	0	3,784
	4	0	25	97,000
Nurse M...	5*	0	2783	20,316
	6	0	25	966
	7	0	0	12,750
	8	0	616	10,380
Nurse E...	9†	—	—	—
	10	0	0	5,750
	11	0	0	59,250
	12	0	0	140,000

* Uvula accidentally swabbed in addition.

† Despatched wrongly and only examined for diphtheria bacilli.

These throats had to be abandoned for experimental purposes but the results are nevertheless interesting, if for nothing else at least for showing what a happy hunting-ground for microbic life the fauces are. It was accordingly decided to select a throat not so liable to accidental contamination. Swabs Nos. 13 to 17 were taken from the throat of an office clerk, aged 22 years, in good health and a non-smoker. The first three and the last were taken at 11 o'clock in the morning and No. 16 at 4 in the afternoon. In the case of the last named the tongue was very slightly touched with the swab, which probably accounts for the increased number of organisms present. Swab No. 17 was from one side of the fauces only. The results obtained were as follows:—

Swab No.	Staphylococcus aureus.	Staphylococcus albus.	Others.
13	0	0	300,000
14	0	0	200,000
15	0	0	430,000
16*	0	0	725,000
17†	0	0	54,250

* Tongue accidentally touched. † One side of fauces only.

Thus all the swabs contained a large number of organisms, and though there was considerable variation between them this was not so great as in the previous cases. Excluding Nos. 16 and 17 the average bacterial content of the swab was about 300,000. There was thus plenty of room for full appreciation of the diminution which it was anticipated would follow the application of antiseptics.

The organisms classed as "others" were streptococci which in the untreated throat were found along with the micrococcus tetragenus. After treatment the micrococcus tetragenus greatly predominated, showing that the streptococci were more easily eliminated by the reagents employed. It was accordingly decided to use this as the test-throat.

Gargling was the first method adopted and it may be remarked that the subject was an adept at this. After the use of the antiseptic the throat was invariably gargled once thoroughly with sterilised water, on Professor Delépine's advice, in order to prevent any of the antiseptic adhering to the swab and thus interfering with growth of the micro-organisms. A curious result was at once noted—namely, that after the use of the gargles staphylococcus albus frequently appeared and rarely staphylococcus aureus, although both of these had been absent prior to gargling. The only theory one could form to account for this was that the gargling process had forced the tissues and the bacteria attached to them out of their normal situation

and the swab had picked the latter up in its journey round the anterior pillars. Swabs Nos. 18 to 20 show this markedly.

Swab No.	Antiseptic used.	Staphylococcus. Aureus.	Staphylococcus. Albus.	Others.
18	$HgCl_2$ 1 in 2000	0	125	675
19	HgI_2 1 in 2000	0	50	75
20	Cyllin 1 in 1000	0	90	102
21	Izal 1 in 800	0	15	45

These results were undoubtedly excellent as compared with those obtained from the normal throat and show the probable value of these now well-proved antiseptics; izal stands well out as a germicide but the subject complained of the pain caused by it. Amongst other antiseptics examined by the gargling process were the following:—

Swab No.	Antiseptic used.	Staphylococcus. Aureus.	Staphylococcus. Albus.	Others.
22	Boric acid, 1 in 40	—	250	12,750
23	Chinosol, 1 in 2000	—	5	375
24	Carbolic acid, 1 in 80	—	—	1,641
25	Lysol, 1 in 200	50	—	1,875
26	Distilled water	—	—	1,176
27	Lysoform, 1 in 200	—	—	445

There are no exceptional results here therefore except in the case of boric acid which certainly ought to stand condemned for this purpose. Lysoform and chinosol appear to be the best, but the former proved irritating; distilled water was found equal to most of the commonly advocated antiseptics. One is inclined to the conclusion that the action of a gargle is merely that of a mechanical flushing of the parts and with the exception of a few very strong germicides (Nos. 18 to 21) it appears not to be of much consequence what is used for the purpose.

Douching.—It is a curious thing that so few nurses know how to douche a throat properly. I always use now a wheeling table with two glass shelves and with an iron standard running up from one corner to support a syphon douche can containing the lotion to be used. A long rubber tube comes from this and is fitted with a pinch-cock; glass end-pieces are attached to the rubber tube and there are sufficient of these in a lotion bowl on one of the shelves to allow of thorough disinfection and cleansing. The child is wrapped firmly in a sheet, his arms being confined; the nurse sits the child up in bed and places her left arm round his neck so as to fix his head which is pressed against her left side. The head of the child is then bent forward over the receiving bowl. The nurse takes the tube with the pinch-cock in her right hand and passes the end-piece into the child's mouth *between his back teeth* (thus avoiding any interference by the tongue). The wrapping up of the child is a most essential part of the procedure, for it prevents struggling and thus prevents exhaustion, sometimes a vital consideration.

The only two substances tried were hydrargyri perchloridum 1 in 1500 (made up with a little glycerine and tinctura lavandulæ composita) and liquor calcis chlorinatæ 1 in 200, followed in each case by sterilised distilled water. The results are good as shown in this statement:—

	Staphylococcus. Aureus.	Staphylococcus. Albus.	Total colonies.
Hydrargyri perchloridum	25	—	60
Liquor calcis chlorinatæ	—	—	98

This method must therefore stand as one to be recommended for bacteriological cleansing of the fauces, but is hardly adapted for anything except hospital use on account of the difficulty of the operation and the dangers of it when improperly done.

Swabbing.—*Primâ facie* this would appear the most thorough way of bacteriologically cleansing the fauces as well as of insuring that remedial agents were closely applied. In practice I have found it of greater value than any other method. In order to obtain the best results the patient should be placed with the head well back over a pillow in pretty much the same position as for removal of adenoids so as to prevent any liquid expressed from the swab passing into the larynx. The swabs used should be nearly as large as a walnut and can conveniently be made of absorbent wool carefully fastened into an ordinary sponge-holder, or tightly twisted over a wooden holder with a roughened end and should be firmly and rapidly passed with a rotary motion not only over the fauces but if possible into the naso-pharynx, at least three or four swabs being used. Some nurses manage exceedingly well with a little lint wrapped over the forefinger, but this may result in a "poisoned wound" unless the nurse is extremely careful. The results obtained bacteriologically emphasise the value of this mode of treatment. Swab C3, taken after *gentle* swabbing with liquor calcis chlorinatæ 1 in 200, showed the following:—Staphylococcus aureus, none; staphylococcus albus, 10; total colonies, 75. The other organisms were the tetracoccus as before and some streptococci, yeasts, and sarcinæ, probably expressed from hiding places. After swabbing with 0·5 per cent. formalin there were only 30 colonies, all of the staphylococcus pyogenes albus, found capable of growth, an excellent result; the subject, however, did not care for the treatment, which he said was most irritating to the throat, nose, and eyes.

A very useful lotion in practice, inexpensive and unirritating, was one I had seen advocated for use for another purpose—namely, persistent otorrhœa—by a recent writer in one of the leading medical weeklies. Its composition is as follows: Acidum boricum, 1 ounce; spiritus vini rectificatus, 2½ ounces; glycerinum purum to 8 ounces. After swabbing the fauces once with this and then with sterilised water the bacterial flora of the anterior pillars were reduced to 25 total colonies and there was an entire absence of staphylococci and streptococci. I can therefore recommend this as a swabbing agent of very considerable value.

Antiseptic lozenges.—Pharmacy has certainly not developed this form of medicament to any degree of elegancy. The B P. lozenges of the antiseptic variety—e.g., trochisci acidi carbolici and trochisci eucalypti gummi—may be tolerated by adults but children have to be literally forced to take them and adopt all kinds of tricks to get rid of them. Many adults are children in this respect. My own experience of them is that the children are to be commended rather than blamed for their discrimination. Trochisci potassii chloratis are slightly more palatable and tolerable but I have never experienced any good results with them. On one occasion when a patient used them very freely poisoning resulted. At one time I tried making lozenges of my own after the style of what I believe are termed "fondants," introducing a small percentage of antiseptic. For those who have sufficient time to devote to this form of pharmacy I submit the following recipe. Take one pound of icing sugar and the white of one egg; beat the egg till it is liquid; work the sugar into it; add the antiseptic; mix thoroughly and knead with the hand like dough; roll out into thin cylindrical masses; cut up into the requisite number of fondants, place on a plate, and allow to dry in the air. They do not keep well but have a tendency to go hard and lose efficiency in the case of volatile antiseptics.

The sole object of a medicinal lozenge is to keep the part of the mouth or throat one desires to treat bathed for a time in the drug dissolved in the saliva. The main point, therefore, to receive attention in the making of a medicinal lozenge is that it should be so temptingly constructed that children in particular will take pleasure in its consumption and therefore keep it in the mouth for a long time. I know of only one medicated lozenge—formamint tablets—which meets this requirement. My hospital children are not told they are to be given lozenges but that if they are good they shall have some "toffies"—a little dodge which works extremely well in practice. When they are subsequently given these formamint tablets they take them greedily and not infrequently actually cry for them. The only times at which any trouble at all has been experienced in their administration have been when there was acute tonsillitis or angina, and here of course the swallowing of anything at all is a painful process. Even in such cases, however, perseverance usually results in the taking of a few and then the painfulness disappears fairly rapidly and they are well taken. The introduction of a powerful and acrid drug like formic aldehyde into a palatable lozenge is certainly a pharmaceutical triumph. These tablets are stated to be a chemical combination of formic aldehyde with lactose in the proportion of 0·01 gramme of formaldehyde in 1 gramme of the total combination; citric acid and probably some flavouring agents are added. They evolve, so it is stated, nascent formic aldehyde in the mouth, and now and then one gets a slight burning sensation and the peculiar taste of this substance, though this is usually only noticeable with the first one taken. They produce a pleasing flow of saliva and the formaldehyde dissolved in this is carried by the process of sucking and swallowing to the various crypts and recesses of the mouth and throat. The amount of formaldehyde in

each tablet is small and, in my opinion, the manufacturers have been well advised in proceeding on these lines. The pharmacist who crowds a large amount of antiseptic into one lozenge will not find his preparation appreciated, even if it be tolerated. Surely it is an easy matter to distribute the same amount in two or three lozenges and instruct the patient to take them more frequently.

The fact that the mouth, fauces, and pharynx are well supplied with muscles is frequently lost to sight, as is also the fact that certain very complicated movements are involved in the act of deglutition. A brief *résumé* of the processes of mastication and deglutition may not therefore be out of place here. Prior to actual swallowing—i.e., whilst the morsel is anterior to the isthmus of the fauces—it is turned over and over by the muscles of the lips, tongue, and cheeks, and is bandied about from one part to another of the oral cavity. The front of the tongue is then pressed against the back of the upper incisors, the back portion of the tongue is heaved up with a wave-like motion, and the now moistened bolus is carried, as it were, on the crest of the wave, through the isthmus of the fauces, the pillars of which first open apart to allow of its passage and then contract so as to partition off the buccal from the pharyngeal cavity. At the moment of "heaving" of the tongue certain other complicated actions take place by means of which the pharyngeal is shut off from the laryngeal channel. The constrictors of the pharynx immediately grasp the food morsel, the velum palati is elevated, and the orifices of the Eustachian tubes, which are probably closed during the resting or inactive condition of the pharynx, are now opened. The act of deglutition is finally completed by the passage of the morsel into the œsophagus and the onset of peristaltic action.

This semi-dissertation on the physiology of deglutition is not without important indications for treatment of buccal, faucial, and pharyngeal conditions. When the mouth is opened for douching, swabbing, or gargling, the parts, particularly the fauces, are at once thrown into an unnatural position, and many of these bacterial hiding-places are at the same instant covered up and protected from contact with the reagent applied. Moreover, the reagent can only be in contact with the parts to which it is applied for an inconsiderable period, and probably what little good results from such unnatural methods is effected by the reagent left on the parts mingling afterwards with the saliva and being carried in the manner just described to other parts. When lozenges or soluble tablets are used the mouth, fauces, &c., are not forced into any artificial position; the reagent dissolved in saliva and carried along by the muscular movements of deglutition flows for a considerable period over the surfaces to which it is desired to apply it; and what is of the greatest importance in diseases of these parts associated with the presence of bacteria the antiseptic is enabled by these muscular movements to follow the bacteria to their anatomical lairs.

I therefore wish to enter a strong plea for the elaboration of the lozenge treatment of mouth and throat diseases, to say nothing of other diseases where one wishes to give to a patient a drug to be taken, for example, during business hours, on journeys, &c. The dry concentrated form of drug meets many of these requirements and has many advantages, but it has this amongst other disadvantages, that the patient gulps it down whole (particularly if it be disagreeable) and it may lie for some time adhering to the stomach or intestinal wall where, if it be at all of an irritant nature, it is bound to produce discomfort and ill-effects on the mucosa. In the form of a palatable lozenge none of these bad effects need be feared. Further than this, I am a great believer in what physiologists term the "summation of stimuli" and I cannot help the thought that heroic drugging would seldom be necessary if some such means as the one suggested were adopted for the administration of frequent small doses of medicine. However, this is rather a digression.

Knowing the powerful germicidal effects of formaldehyde and observing the excellent results recorded of it by Dr. Daus[1] in acute follicular tonsillitis, mumps, acute submaxillary gland inflammation, and even in middle-ear disease, and the very good report of Dr. Piorkowski of the Bacteriological and Physiological Institute of Berlin, I determined to test these formamint tablets on the same lines as those on which gargles, &c., had been tested. I met with the most encouraging results. In a swab taken immediately after the sucking of one formamint tablet no bacteria whatever appeared, even in the dilution of one-fifth of the emulsion; in a swab taken ten minutes afterwards 35 micro-organisms grew, and in one taken 30 minutes afterwards 150 were present. There was, moreover, a total absence of staphylococci in all three swabs, the organism simulating the micrococcus tetragenus being the only one to resist the remedy and appearing in the two later swabs. This result is a little inconsistent with that obtained on swabbing with 1 in 200 formalin (*vide supra*) so that I repeated it in part with the following result. The patient's throat was first tested in order to get the bacterial contents of the anterior faucial pillars and the posterior pharyngeal wall. Next he was instructed to suck two formamint lozenges—one every half hour—and then to gargle with sterilised water. The fauces and pharynx were then examined and the results are shown in the following statement:—

Colonies Capable of Growth on Agar Plates at 37° C.

		Total colonies.	Staphylococcus albus.	Tetrads.	Streptococci.
1. Anterior Pillars	Before...	7500	0	900	2000
	After ...	80	45	0	15
2. Posterior Pharynx	Before...	965	650	0	200
	After ...	80	70	0	0

These results must be classed as distinctly excellent. I next proceeded to test two of the B.P. lozenges.

Swab C1 was taken precisely as the other swabs, a few minutes after the slow sucking of trochisci eucalypti gummi, B.P., the throat being gargled immediately afterwards with sterilised water. The colonies yielded were: staphylococcus aureus, none; staphylococcus albus, none; total colonies, 6600.

Swab C2 was taken after similar treatment with trochisci acidi carbolici B.P. and yielded: staphylococcus aureus, none; staphylococcus albus, 1500; total colonies, 41,000. The chief organism found was a tetracoccus closely resembling the micrococcus tetragenus.

The difference between these two lozenges is in my opinion due to the astringent action of the eucalyptus in closing up microscopic hiding-places for bacteria.

Clinical results.—These have been obtained chiefly in connexion with scarlet fever, diphtheria, "hospital throats," and the like. In no class of case is the hygiene of the mouth and throat of more importance than in scarlet fever. Left alone, many a case of this disease, simple at the onset, drifts into the septic variety; the organisms accompanying the specific one (whatever that may be) begin to flourish and invade accessory parts, setting up otorrhœa, rhinorrhœa, post-scarlatinal diphtheria, cervical lymphadenitis, &c. The most important line of treatment, therefore, in scarlet fever is, in my opinion, to keep the mouth and fauces in a condition unfavourable to the growth of these organisms. In the case of fauces already septic swabbing and douching are essential to remove the mucus and exudation which are almost always present. *It is useless to apply any curative until this has been done.*

In the septic or anginous variety of scarlet fever the tonsils and soft palate are œdematous and covered with mucus, and the condition is usually accompanied by ichorous nasal discharge. In such cases there are generally present some ulcers difficult to localise at first and most commonly situated in the angles between the uvula and palatal arches. Treatment is most difficult in these cases on account of the pain necessarily associated with it. But my experience has been that the best method is to begin with a very thorough cleansing of the parts, wrapping the child firmly in a blanket, using a mouth-gag if necessary, and swabbing first of all with some weak antiseptic such as 1 in 1500 hydrargyri perchloridum made up with a little glycerine and tinctura lavandulæ composita, then douching with the same solution, and afterwards putting the patient on to a liberal supply of formamint tablets. If the child can be encouraged to take these it will not be necessary to repeat the forcible swabbing and douching more than a very few times, and indeed the less it is done the better, for an ulcerated part cannot be expected to heal if we use measures that are bound to remove some, or perhaps all, of the newly formed epithelium which is growing over the ulcer. The swabbing, as the bacteriological examination already quoted shows, removes most of the presumably causative bacteria, and the mild antiseptic contained in the tablets

[1] Medizinische Klinik, 1906, No. 16.

mentioned may be relied upon to prevent their subsequent multiplication.

Gegner[2] condemned the use of formic aldehyde as a gargle because of its irritating effects on mucous membranes, a fact well known to all who have used the substance. It is a fact that the use of formic aldehyde for swabbing, douching, or spraying the fauces causes the appearance of a bright red congestion in the mucosa and frequently in sensitive patients irritation of the nose and even of the eyes, accompanied by more or less watering. But after the use of formamint tablets I have had none of these signs of irritation and only very faint reddening of the buccal and faucial mucosa.

There was a fear that the use of formic aldehyde even in the very small amount present in a lozenge, such as that named, might increase the liability to albuminuria when used in scarlet fever, but the figures show that this is not at all the case. Out of 300 cases taken over a period of about two and a half years and treated without formamint 48 cases of albuminuria (i.e., 16 per cent.) were recorded of varying duration. Of 100 cases treated with the tablets given at the average rate of about 12 per day for about a week at a time only seven cases (or less than half the above rate) are recorded. Moreover, in several instances the tablets were continued throughout the whole of an attack of albuminuria and the albumin cleared up under suitable treatment during their administration.

It appears to me highly probable too that the employment of these tablets has prevented the development of septic conditions and their consequences. The following figures certainly seem to bear out this statement:—

Cases in which Formamint was not Used.

	No. of cases.	Percentage occurrence.
Number examined	300	—
Cases in which otorrhœa occurred	60	20·0
,, ,, rhinorrhœa occurred	68	22·6
,, ,, cervical lymphadenitis, &c., occurred	34	11·3
,, complicated by rheumatism	26	8·6

Cases in which Formamint was Used.

		Percentage occurrence.
Number examined	100	—
Cases in which otorrhœa occurred	7	7
,, ,, rhinorrhœa ,, ...	10	10
,, ,, cervical lymphadenitis occurred	8	8
,, complicated by rheumatism	3	3

A few summarised records of cases of scarlet fever may serve to emphasise the utility of this form of medication.

CASE 1.—The patient, aged seven years, first became ill on Feb. 4th; rash on Feb. 6th; hospital Feb. 6th. Throat deeply congested; lacunar exudate on tonsils and fauces. Temperature, evening, 102·6° F. Formamint, one every hour. Feb. 7th: Temperature, morning 100·6°, evening 102°. Formamint as before. Feb. 8th: Temperature, morning 98·4°, evening 99°; throat perfectly normal. Uninterrupted recovery.

CASE 2.—The patient, aged seven years, first fell ill on Feb. 8th; rash on the 10th; hospital on the 11th. Temperature, evening, 101·8° F. Tonsils deeply congested and swollen; some doubtful pultaceous exudate left anterior fauces; thin, acrid, nasal discharge excoriating anterior nares and lips. Throat swabbed and douched with hydrarg. perchlor. 1 in 1500. Formamint one every hour. Feb. 12th: Diphtheria bacilli in nasal discharge and faucial swab. Congestion of tonsils, &c., lessened. Temperature, morning 101°, evening 101·4°. Formamint as before; no further swabbing. Feb. 13th: Temperature, morning 99·2°, evening 98·2°. Congestion quite gone; some exudate still adhering. Formamint one every two hours. Feb. 14th: temperature, morning 99°, evening 98·2°; throat normal. Slight rheumatism and albuminuria on Feb. 24th, readily cured. (N.B.—Antitoxin not given in this case.)

CASE 3.—The patient, aged three years, first fell ill on August 25th; rash on the 26th; removed to hospital on the 27th. Temperature, evening, 102·2° F. Fauces covered with wash-leathery membrane; slight nasal discharge. Antitoxin 6000 units; formamint one every hour. August 28th: temperature, morning 100·6°, evening 103·2°. Throat swab negative; nasal swab contained short diphtheria bacilli. Antitoxin 6000 units; formamint as before. Fauces still coated with exudate. August 29th: temperature, morning 100·2°, evening 99·4°. Fauces almost clear; nasal discharge much less. August 30th: temperature, morning 99·6°, evening 98°. Fauces quite clear; nasal discharge almost imperceptible. August 31st: temperature normal. *No diphtheria bacilli in three consecutive throat or nasal swabs.*

CASE 4.—The patient, aged seven years, first fell ill on July 13th; rash same day; hospital on the 14th. Temperature, evening, 103·4° F. Throat deeply injected throughout, tonsils considerably swollen, no exudate. Intense pain on swallowing. Formamint one every hour; badly taken at first, later with fair comfort; no other treatment. July 15th: temperature, morning 102·4°, evening 102·6°. Throat somewhat less congested; swallowing much easier. Formamint as before. July 16th: temperature, morning 100·4°, evening 99°. Throat quite normal; general condition excellent.

[2] Münchener Medizinische Wochenschrift, 1893, p. 589.

CASE 5.—The patient, aged six years, first fell ill on Dec. 22nd; rash on the 23rd; hospital on the 24th. A thin, poorly nourished child. Tongue soft, flabby, and crossed with deep sulci filled up with masses of dead epithelium; buccal and labial mucosa and gums soft, spongy, and containing numerous small greyish ulcers (scorbutic?). Temperature, evening, 102·8° F. Mouth swabbed out with glyc. boracis every four hours. Formamint tablets taken with difficulty; a few only. Dec. 25th: Temperature, morning 101·8°, evening 101·6°. Mouth and tongue somewhat cleaner but now appearing raw and beefy; very painful. Mouth swabbing stopped. Formamint taken rather better, about ten during day. Dec. 26th: Temperature, morning 101°, evening 100·6°. Ulcers on buccal mucosa disappeared. Tongue still very raw and painful. Dec. 27th: Formamint one every hour. Temperature normal. Gums and buccal mucosa firm and normal in colour. Sulci on tongue rapidly healing. Dec. 29th: Tongue, &c., perfectly normal except for thin bluish-white lines showing where sulci had been.

In one case of syphilitic ulceration of the tongue in a congenitally affected child, three years old, also suffering from scarlet fever, I had the best results from the use of formamint tablets, coupled, of course, with specific constitutional treatment. I have also had *temporary* benefit from their use in post-nasal follicular hypertrophy or adenoid growth; the nasal tone of voice and the mouth-breathing have both been improved for the time.

One cannot, of course, speak with certainty of the preventive properties of any drug, but a case which came under my daily observation may be cited as showing that in these formalin-containing tablets we have probably a useful prophylactic agent. A boy who had gone on a visit to a house developed pronounced mumps after being there a few days. There was no possibility of isolating him, and there were two other children of a susceptible age who had to share the same bedroom and come in pretty close contact with him all day long. I suggested that all three children should be given formamint tablets freely, and this was carried out with the result that despite their close contact the other children escaped the infection. This is only an isolated case, but it will certainly impel me to try the same experiment again. Mumps appears to me a disease for which this mode of treatment is peculiarly well adapted.

I hold no brief for this particular medicament, indeed, I think it one capable of considerable improvement, for the tablets dissolve too rapidly, and it would be better, in my opinion, if they were made more lasting—e.g., after the style of a jujube. The results obtained should stimulate pharmacists to the preparation of lozenges containing other antiseptics in a form such as will appeal to children and sensitive adults. Cases in which properly performed swabbing and douching have been successful are innumerable but I have none presenting special points of interest. The less sensitive the throat and therefore the longer the swab can be held firmly in contact with the affected part the more successful will be the treatment. In a very few cases I have applied *powders* either on dry swabs of cotton-wool or by insufflation to ulcerated fauces and tonsils. The chief difficulty is to find the exact site of the ulcer or ulcers, and it is sometimes quite impossible to locate them; in such a case it is useless to apply any powder on the off chance that you may cover the ulcerated patch. The most useful one for infective throat conditions is very finely powdered boric acid. Another for use in more severe cases is boric acid containing from ½ to 1 per cent. of lysoform. Powders must only be applied in very small amounts and with the greatest care to avoid possible irritation of the larynx.

The results then go to show that for throat disinfection *gargling* possesses no advantages, but, on the contrary, several serious disadvantages; that spraying is little better than gargling; and that the only reliable methods are swabbing and douching. Medication by antiseptic lozenges is an ideal line of treatment, in my opinion; it has been signally successful in my hands and I hope to see it considerably developed.

I cannot conclude without emphasising the necessity which my experience shows me is well recognised in hospitals but rarely is so in private practice—probably on account of the difficulty involved—of treating the post-nasal region as well as the fauces in almost all diseases of the throat and without exception in all infective conditions. The extra time and trouble necessitated will receive full repayment in the shape of much earlier cure. And my experience in such post-nasal conditions has led me to regard sulphate of zinc (one or two grains at most to the ounce) as one of the most useful remedies we possess. The nasal douching must be done in the *most gentle manner possible*, and when the condition is showing signs of abatement it is better to stop the douching altogether and to

let nature complete the cure unaided. The continuance of those troublesome nasal discharges following on scarlet fever, diphtheria, measles, and the like is due in the majority of cases to improper prolongation of treatment.

Upper Gloucester-place, N.W.

ACQUIRED DIVERTICULA OF THE SIGMOID FLEXURE,

CONSIDERED ESPECIALLY IN RELATION TO SECONDARY PATHOLOGICAL PROCESSES AND THEIR CLINICAL SYMPTOMS.

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(Concluded from page 850.)

CLINICAL ASPECTS.

THE clinical importance of these diverticula needs no further emphasis than that given by the number and gravity of the collected cases; yet it is only since Graser's communication in 1898 that the consequences of false diverticula of the sigmoid flexure have been seriously considered by the operating surgeon. But the time has come when no resourceful surgeon can afford to overlook the incidence of such cases; indeed, it is to the surgeon that we shall mainly look for an increase of our facts concerning them. It is by the "pathology of the living," as Moynihan happily phrases it, that we shall attain a proper clinical perspective with regard to them. One is almost constrained to think that we morbid anatomists have been a little slow in our appreciation of the pathological "possibilities" of acquired diverticula; certainly priority of observations rests almost entirely with our surgical colleagues. The foregoing pathological summary makes it scarcely necessary to attempt a detailed clinical differentiation of the various types of case; indeed, it would not be easy, for there would necessarily be much overlapping. But the great majority of the cases present themselves to the clinician in one of the four following ways, a few points concerning which yet remain to be mentioned.

1. *Inflammatory trouble, more or less acute, in the left lower abdomen (left-sided "appendicitis," sigmoiditis, peri-sigmoiditis, epiploic appendicitis, diverticulitis, peri-diverticulitis).*—Inflammatory cases of this type constitute a large and important group. Many of them are clinically identical with the various types of inflammation of the vermiform appendix (Nothnagel (54)*), except for the fact that the trouble is on the left side. So strong is the resemblance that in Bland-Sutton's case (No. 57) the question of transposition of viscera was carefully considered. Moreover, just as we are familiar with many cases of appendicitis which clear up entirely, there can be no doubt that this may happen in cases of "diverticulitis," and this latter, as we have seen, is very frequently indeed a true "epiploic" appendicitis. Such cases, coming neither to operation nor necropsy, are difficult to verify; yet a number of very suggestive ones have been put on record (Mayo (48), Patel (56), D'Arcy Power (14), and others). Moreover, the history of earlier inflammatory troubles noted in some of the cases proves the point. In the study of sigmoiditis (of which diverticula are becoming increasingly recognised as an important and frequent cause) the existence of cases which clear up is established beyond doubt (Tuffier (72)). Patel, indeed, says: "Peut-être un jour sera-t-on en droit de dire que, dans presque tous ces cas décrits sous le nom de sigmoidites, il s'agit de véritables *diverticulites*, absolument comme l'appendicite a été substitutée peu à peu à la typhlite." We may therefore hope to learn to recognise them as accurately, if not as frequently, as we do the analogous cases in the right iliac region. Georgi (21) emphasises the fact that in most cases there is at first marked inflammation of the diverticulum without symptoms. When these occur, the earliest are a little pain, aggravated by constipation, in the neighbourhood of the sigmoid flexure, and some sensitiveness to pressure; in marked cases a tumour is to be felt.

Left-sided tumour and abscess formation is a striking feature. In 63 cases a tumour was felt in 20 and abscess formation occurred in 23, though not in all cases giving rise to tumour, for the reasons given above. Georgi has further pointed out that with considerable pus formation there may be but little pain and no pyrexia.

In cases of sigmoiditis a characteristic tumour is often felt; it is elongated, sausage-shaped, tender, and often ill-defined; it may be moveable or fixed, lying a little above Poupart's ligament (frequently parallel with it). Shortly after the occurrence of abdominal symptoms referable (more or less definitely) to this quarter of the abdomen, this swelling may be made out: it may disappear, rapidly or gradually, or may increase, with signs of pus formation.

So far, the correct diagnosis of diverticular inflammation has apparently only once been suggested (by Mayo, Case 42). The suggestion would only be reasonable in a patient of middle age or older and who was the subject of marked or former constipation. Inflammatory trouble of the above kind occurring in such a patient would at the best render a diagnosis of *diverticulitis* very uncertain; it would be much easier to label a case *sigmoiditis*, one of the commonest causes of which is constipation (Capasso (8)).

The chief conditions to be considered in differential diagnosis would appear to be (*a*) ordinary appendicitis with left-sided symptoms; (*b*) pelvic inflammations; (*c*) ovarian cysts with strangulation or inflammation; (*d*) actinomycosis of the sigmoid flexure; and (*e*) syphilitic and tuberculous pericolitis. This list does not exhaust the possible sources of error; diagnoses of pancreatic, ovarian, and cæcal tumours have each been made. There seems to be a tendency to accept too readily tuberculosis as the cause of some of these non-malignant strictures of the sigmoid flexure; and F. S. Kidd (41), in discussing the differential diagnosis of these hyperplastic tuberculous cases, does not even mention the stenosis of diverticular origin.

2. *Intestinal obstruction.*—When acute this is probably due to secondary involvement of a coil of small intestine (Cases 59 and 50), and the initial cause is practically undiagnosable except at operation, where, however, its recognition may be of considerable importance. Chronic obstruction of the small intestine, of which my case, No. 51, is the only example, must also be similarly difficult as regards diagnosis. When obstruction occurs it is usually chronic, or recurrent, or acute upon chronic. It is generally localisable to the sigmoid region (to the ileo-cæcal in Case 80), and nearly always leads to a diagnosis of carcinoma. In the 25 cases in which there was stenosis of the bowel, in at least 12 the diagnosis of carcinoma was made, either before or at the operation; but in many the diagnosis is not mentioned. In England this mimicry of carcinoma has been referred to by Monsarrat (49), but Moynihan (51) alone has given it the emphasis which its importance deserves. The differential diagnosis from malignant disease is extremely difficult. Very advanced age, a comparatively recent constipation, marked cachexia and blood in the stools, all favour strongly the presence of carcinoma; while long-standing constipation, the absence (after repeated examinations) of blood from the stools, and slight cachexia together with any evidences of pus formation would suggest the possibility of a peri-diverticulitis; entire absence of constipation may occur with either condition, and blood has been found in the stools in at least one case of diverticular origin (No. 59). Many observers (Bland-Sutton (4), Gordinier and Sampson (22)) have no doubt that "cures" of cancer in this region have been due in some cases to the fact that the lesion has been one of simple inflammation and probably diverticular; Tuffier (42) quotes a very striking case. The proceedings may be greatly modified by a correct diagnosis at the time of operation. In some cases regarded as malignant further measures have been abandoned or a merely palliative operation (e.g., colotomy) performed, the amount of adhesion being regarded as a bar to more radical proceedings. These may, of course, be impossible whether the adhesions be due to simple inflammation or to malignant disease, but in one or two cases microscopic examination has revealed the absence of malignant disease and a radical operation has been then successfully carried out.

3. *Perforative peritonitis.*—Cases of this kind, in which the site of perforation is undiscoverable at the laparotomy, occur from time to time in the experience of every surgeon. It will scarcely be necessary to say now that a routine examination of the sigmoid region should always be made, with especial care if the age and previous history render the presence of diverticula in the least degree possible.

* The parenthetical figures throughout the article relate to the bibliography at the end.

4. *Vesico-colic fistula.*—These cases form a well-defined clinical group with an interest similar to that which attaches to the bowel stenosis cases, in that the diagnosis of carcinoma may be made during life and even at necropsy. There is a further point of resemblance: just as the bowel stenosis cases have only recently (1898) had their origin clearly defined and numerous cases prior to that date have certainly been overlooked, so it is only beginning to be recognised that vesico-intestinal fistulæ also have this origin not very infrequently. It is true that a very clear description of the condition was given by Sydney Jones (Case 95) as early as 1858, but subsequent writers have failed to attach sufficient importance to acquired diverticula being the original cause of adhesion between the bladder and the sigmoid flexure or the large bowel in its neighbourhood. Harrison Cripps (12) in his monograph on "The Passage of Air and Fæces through the Urethra" (1888), includes Jones's case but makes no comment on its peculiar pathology. Heine (32) in 1904 carefully investigated the recorded cases of the kind and collected seven of undoubted diverticular origin and nine more in which such an origin was extremely probable. Moynihan (51) has recently drawn attention strongly to the clinical importance of this cause: he says "the formation of a vesico-intestinal fistula seems to be one of the tendencies of a perforated false diverticulum; a search through the literature has shown that it is far more common than was supposed. In cases where a hard growth in the intestine is accompanied by the passage of flatus and fæces by the urethra, a diagnosis of carcinoma seems irresistible, yet the *probability* is that 'the growth' would be simple, and that the cause of the fistula would be a false diverticulum which had burrowed its way through all the coats of the bowel, and thence through the wall of the bladder which had become adherent." The italics are my own: perhaps many would think the substitution of "possibility" for "probability" would be more accurate. Yet the evidence does not support this. It is a common belief that the most frequent cause of vesico-intestinal fistula is malignant disease, but this is not so. Cripps clearly demonstrated this; in 63 collected cases he found the fistulæ to be as follows: traumatic, 2; cancerous, 9; inflammatory, 45; and unascertained, 7. It may be argued that if cancer be a common cause cases collected from the literature will show an undue proportion of inflammatory ones as being more noteworthy. Cripps does not take this view, as four of his cancerous specimens were museum ones; from this he thinks there is a disproportion in favour of cancer, owing to its necessarily fatal character and the ease with which specimens are thereby collected in museums. The more recent statistics of Chavannaz (10) support these conclusions; he puts the cases due to malignant diseases at almost 20 per cent. Indeed, the tendency of cancer of the bowel to cause this fistulous communication by *direct extension* of the growth has probably been much exaggerated; Kelly and McCallum (40) point out that the fistula is more often *above* the growth and not directly due to it; cases of the latter kind they estimate at less than 10 per cent. of the whole. In Cripps's 63 cases the situation of the fistula was—

Rectum	25	cases.
Colon { sigmoid flexure 11 / not stated 4 }	15	,,
Small intestine	12	,,
Colon and small intestine	5	,,
Unascertained	6	,,

Chavannaz finds that in 95 cases 24 per cent. were between the bladder and the sigmoid flexure. These figures tend to disprove the frequency of cancerous fistulæ, but they do not directly prove their origin to be *diverticular*, as distinguished from other causes of inflammation. But Heine's research helps strongly in this direction; the study of his nine probable cases will convince one of this. My own observations support his conclusions; Cases 52 and 99 are "missed" cases (in the latter the pathology was unrecognised by the author and by at least one subsequent commentator). On museum shelves I have found specimens which are almost certainly of this nature, but, of course, one must handle them actually to verify this.

One is anxious to avoid drawing stronger conclusions than the facts warrant, but there can be no doubt that vesico-sigmoid fistula due to acquired diverticula of the bowel is a definite pathological condition of some frequency. The practical importance of these facts is considerable; they hold out a much greater prospect of relief by surgical interference. An operation may be either merely palliative or as a preliminary to more radical measures; in either case left colotomy will be the most probable proceeding; or a radical operation may be undertaken in the first instance.

The liability to post-operative peritonitis.—In several of the cases general peritonitis has followed operation. Though no positive conclusions can be drawn from the small number of cases it is possible that the cause is not *necessarily* infection from without at the time of operation. In all the cases we have a possible source of sepsis in the thin-walled sacs with their fæcal contents: there is certainly, therefore, an added risk in the operation. The practical hint would seem to be that every case of supposed carcinoma, or other stricture in this neighbourhood should be examined with scrupulous care, and if there be any possibility of a diverticular origin the question of the advisability of a modification of the toilette of the operation should be considered.

I append a summary of the cases other than those given in the text, which I have been able to collect. I have no doubt that the number will be enormously increased in the next few years, and our knowledge will become more precise in consequence.

In conclusion, I have to thank many of my colleagues at Leeds for the help they have afforded me, both by material and suggestions; especially must I mention Dr. J. Kay Jamieson, Dr. G. W. Watson, and Dr. James Allan. My thanks are also due to Dr. J. Fawcett, the curator of Guy's Hospital Museum, several specimens from which I have included in the above text and summary.

*CASE 64 (Guy's Hospital Museum, Preparation 2522).—Stenosis, abscess. Entry in catalogue: "Portion of colon of which the canal is at one part nearly closed by thickening and contraction of its walls. At seat of stricture mucous membrane is raised into thick folds and several *ulcers* lead through it to narrow fistulous canals which pass into the surrounding condensed tissue in the course indicated by some bristles. It is probable that this disease originated in an abscess in the cellular tissue connecting the colon with the abdominal walls." The stricture is at the lowest part of the sigmoid flexure; the "ulcers" are undoubtedly the orifices of diverticula, with smooth edges lined by mucous membrane.

CASE 65 (Guy's Hospital Museum, Preparation 769, Dr. Prance, 1886).—Abscess. Male, 60 years of age. Constipation and abdominal pain for ten years. Abscess in the left side of the abdomen six weeks before death. Necropsy: emphysema, enlarged heart. Abscess cavity between the left kidney and the colon which communicated with the bowel through an aperture at the bottom of the specimen. This is undoubtedly the sigmoid colon; it is much sacculated, and the sacculations involve the normal haustra. In the floor of these, as well as in other situations in the mucous membrane, are smaller orifices leading into tubular passages which are lined with mucous membrane. These for the most part doubtless entered the fatty tissues of the appendices epiploicæ, but this is now carefully cleaned away, showing many of the diverticula cut across. "At the bottom of the preparation one of the sacculi shows a small perforation, through the edges of which the mucous membrane is everted" (catalogue). This is probably the specimen referred to by Hale White (27).

CASE 66 (Penrose, quoted by Rolleston (62)).—Retroperitoneal abscess diagnosed as pancreatic tumour. Female, 47 years of age. Abdominal tenderness and pain, flatulence and sickness for 18 months; worse one month. Tumour in the left side thought to be connected with the pancreas; found to be due to large retroperitoneal abscess, extending from the brim of the pelvis to the diaphragm. At the lower end of the descending colon three ulcers (one at the tip of a diverticulum); two opened into the abscess.

CASE 67 (Fiedler (19), 1868).—Abscess perforating externally. Female, 64 years of age. Former constipation; last few years loose stools; obese. In the left iliac fossa a tender, irregular tumour; the overlying skin somewhat œdematous and infiltrated; considerable pyrexia. Abscess burst by fistulous openings in abdominal wall and fæcal material was discharged; an abscess formed subsequently in right iliac region.

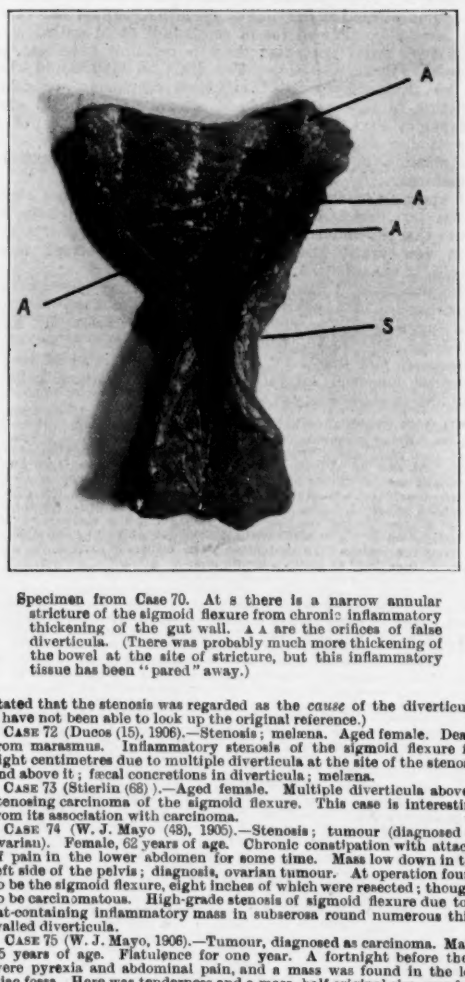
CASE 68 (Fielder, 1868).—Abscesses. Female, aged 22 years. Nutrition good; chronic constipation. Abdominal pain, distension, and tenderness; maximal in the sigmoid region; diarrhœa. Large abscess in left iliac region extending to the right of the pelvis; numerous perforations due to diverticula, leading from the colon and especially from the sigmoid flexure. Some only ulcerated and contained fæcal masses. Adhesion to neighbouring coils.

CASE 69 (Bigg (2), 1904).—Extraperitoneal abscess. Multiple diverticula of the sigmoid flexure; one had perforated and had caused an extraperitoneal abscess.

*CASE 70 (Museum of Leeds Medical School, Preparation E218).—Stricture of bowel. No history or notes (old specimen). Narrow, annular stricture of the sigmoid flexure seven inches from the anus; it barely admits a lead-pencil and is caused by inflammatory tissue only. Much of this has been carefully pared away; in cleaning away the appendices epiploicæ and fat from the rest of the gut several diverticula are seen to be cut across. The mucosa at the point of stricture is superficially ulcerated; above this it is normal and presents false diverticula in two rows on either side of the meso-sigmoid. On one side there are five such; three of these are cut across. On the other side there are three shallow pits which are early diverticula somewhat stretched out by the dilatation of the gut above the stenosis. In the strictured area is a "pouch" but owing to the ulceration and to the paring away of the inflammatory tissue outside the stricture this cannot certainly be identified as a diverticulum, though it probably is of this nature

CASE 71 (Fabris (18), 1902).—Stenosis. Female, 68 years of age. Numerous diverticula of the sigmoid flexure extending up to nearly the middle of the transverse colon; they were from pea- to nut-size. In the rectum were chronic ulceration and stenosis, the fæcal obstruction due to which is looked upon as the cause of the diverticula. (*Note.*—Beer, who quotes the German abstract of this case, includes it under cases of stenosis of the gut *due to* the diverticula, whereas it is

FIG. 3.



Specimen from Case 70. At s there is a narrow annular stricture of the sigmoid flexure from chronic inflammatory thickening of the gut wall. A A are the orifices of false diverticula. (There was probably much more thickening of the bowel at the site of stricture, but this inflammatory tissue has been "pared" away.)

stated that the stenosis was regarded as the *cause* of the diverticula. I have not been able to look up the original reference.)

CASE 72 (Ducos (15), 1906).—Stenosis; melæna. Aged female. Death from marasmus. Inflammatory stenosis of the sigmoid flexure for eight centimetres due to multiple diverticula at the site of the stenosis and above it; fæcal concretions in diverticula; melæna.

CASE 73 (Stierlin (68)).—Aged female. Multiple diverticula above a stenosing carcinoma of the sigmoid flexure. This case is interesting from its association with carcinoma.

CASE 74 (W. J. Mayo (48), 1905).—Stenosis; tumour (diagnosed as ovarian). Female, 62 years of age. Chronic constipation with attacks of pain in the lower abdomen for some time. Mass low down in the left side of the pelvis; diagnosis, ovarian tumour. At operation found to be the sigmoid flexure, eight inches of which were resected; thought to be carcinomatous. High-grade stenosis of sigmoid flexure due to a fat-containing inflammatory mass in subserosa round numerous thin-walled diverticula.

CASE 75 (W. J. Mayo, 1906).—Tumour, diagnosed as carcinoma. Male, 55 years of age. Flatulence for one year. A fortnight before there were pyrexia and abdominal pain, and a mass was found in the left iliac fossa. Here was tenderness and a mass, half original size, was felt. Resection of seven inches of the sigmoid flexure; thought to be carcinomatous. Chronic inflammation round multiple diverticula; one of these contained an enterolith. Numerous small "pocketings" of mucosa were also present.

CASE 76 (W. J. Mayo, 1902.)—Tumour: mesenteritis; diagnosis uncertain. Male, 41 years of age. Tumour and pain in the left lower abdomen for five months. Tender, hard, irregular, moveable mass felt in the sigmoid region. 16 centimetres of the sigmoid flexure resected; thought to be carcinomatous. Sigmoid mesentery contained a hard nodular mass—two diverticula with inflammatory exudate; the diverticula were much ulcerated.

CASE 77 (Gussenbauer (quoted by Beer) (1)).—Stenosis; tumour. Tumour in the left iliac fossa; diagnosis, carcinoma. At the operation stenosis of the sigmoid flexure with local peritonitis and abscess. Changes subsequently found to be due to multiple diverticula.

CASE 78 (Rotter (64), 1898).—Stenosis; submucous fistulæ. Male, 42 years old. Two months' constipation, three weeks urgent. Diagnosis: obstruction and peritonitis; colotomy; cause of obstruction not found.

Necropsy.—Fist-sized tumour of the sigmoid flexure, regarded as carcinoma but found to be due to inflammatory thickening from diverticula; there were fistulous tracts opening into gut. Mucosa otherwise intact.

CASE 79 (Rotter, 1897).—Stenosis; sigmo-ileic fistula. Male, 53 years of age. Symptoms of obstruction for six months. No previous constipation. Operation as for perityphlitis; artificial anus at end of ileum.

Necropsy.—In the upper rectum a stricture four centimetres long and three centimetres thick, allowing a lead pencil through. Mucosa healthy but above the stenosis was rugose with several fine openings leading to fistulous tracts; these were narrow and communicated with the lumen of the gut and with a small abscess cavity; this was adherent to the vermiform appendix and was in fistulous communication with loop of small gut. Condition regarded as secondary to a former appendical abscess.

CASE 80 (Rotter, 1899).—Tumour; abscess; stenosis. Diagnosis: carcinoma of the cæcum. Male, 58 years of age. Rumblings and pain in the cæcal region, with alternate diarrhœa and constipation for some time. Obstruction for nine days. In the ileo-cæcal region a large tumour of the size of a child's head; fixed, solid, irregular. Diagnosis: obstruction due to carcinoma of cæcum.

Operation.—The sigmoid flexure found to be adherent to the right side of the sacrum; ileo-sigmoid anastomosis. Tumour was formed by sigmoid flexure (20 centimetres) and its mesentery, in which is an abscess. Great thickening of gut with stenosis. Numerous diverticula; six enter abscess cavity.

General Peritonitis.

CASE 81 (Schreiber (69), 1902).—Male, 63 years of age. No previous history; obese; recent constipation; distended abdomen without definite evidence of peritonitis.

Necropsy.—Multiple diverticula of the sigmoid flexure (14), up to the size of a cherry; thin-walled, contained fæces. Bowel thickened and somewhat stenosed; rugose, partially concealing orifices of diverticula. One of the lowest had perforated and caused general peritonitis.

CASE 82 (Schreiber, 1902).—Male, 37 years of age. Stout; alcoholic. Six months' abdominal pain; loose stools.

Necropsy.—Mutiple diverticula (20) of the sigmoid flexure, in two vertical rows; one had perforated. Bowel somewhat thickened and mucosa of the sacs necrotic; contained fæcal concretions. Some fibrosis of the meso-sigmoid.

CASE 83 (Mertens (79)).—Male, 45 years of age. Eight days' pain in the lower abdomen, with constipation. As a result of straining at stool evidence of perforative peritonitis. Origin not located at the operation but at necropsy found to be due to a perforation of false diverticulum of the lower end of the sigmoid flexure.

CASE 84 (Warnecke (76), 1906).—Male, 42 years of age. Slight abdominal contusion; diffuse peritonitis. At the operation a perforation of a diverticulum at the junction of the sigmoid flexure and the rectum was found.

CASE 85 (Ruhwandl, quoted by Warnecke).—An old man with cancer of the tongue. Asthenic peritonitis from perforation of a diverticulum.

CASE 86 (Fiedler (19), 1868).—Female, 38 years of age. General perforative peritonitis; multiple diverticula.

CASE 87 (Paviot, quoted by Patel (55)).—Female, 69 years of age. Several days' indefinite illness, not regarded as abdominal. General peritonitis; multiple diverticula of the sigmoid flexure containing fæcal concretions; two communicated with an abscess cavity which had burst into the peritoneal cavity.

CASES 88 and 89 (Paviot, quoted by Patel).—Two cases of perforative peritonitis form sigmoid diverticula.

CASE 90 (Rolleston (62), 1905).—Female, 71 years of age. Old femoral hernia; abdominal symptoms, strangulation diagnosed; colotomy. Death in five days.

Necropsy.—Abscess round the descending colon, limited by loops of small intestine. Multiple diverticula of the sigmoid flexure. One had perforated and communicated with the abscess; general peritonitis.

CASE 91 (Hilbert, quoted by Georgi (21)).—Male, 37 years of age. Heart failure for six months. Suddenly symptoms of perforative peritonitis. Post mortem the peritonitis was found to be due to perforation of a sigmoid diverticulum.

CASE 92 (Brewer (6), 1902).—Gangrenous diverticulitis; abscess. Male, 45 years of age. Previously had had good health. Five days fever and pain in the left lower quadrant of the abdomen; here rigidity and a tender mass could be felt. Incision and draining of an abscess cavity which contained oblong fæcal concretions; there was a small ulceration in the wall of the sigmoid flexure.

CASES 93 and 94 (Hixford (6), 1904).—Epiploic inflammation. Inflammation of appendices epiploicæ due to infection conveyed from neighbouring false diverticula. The inflamed appendices were palpable as tumours (one of the size of a walnut and one of the size of a hen's egg) and were removed.

Vesico-colic Fistula.

CASE 95 (Sydney Jones (39), 1858).—Male, 64 years of age. Began to pass fæces and straw-like bodies in the urine for 10 months before death. At the necropsy the sigmoid flexure was somewhat contracted and presented a large number of diverticula of unequal length. One had ulcerated at its extremity and had given rise to an abscess outside the gut opening into the bladder; in this there was a fæcal calculus of the size of a horse-bean.

CASE 96 (Treves, quoted Mertens (79) and Heine (32)).—Similar case to above.

CASE 97 (Heine (32), 1904).—Female, 59 years of age. Constipated. Symptoms of vesico-intestinal fistula.

Operation.—Bladder strongly adherent to a hard tumour of the sigmoid flexure, taken for carcinoma. A piece was excised and the wound was closed. On examination the tumour was found to be inflammatory and to be due to peri-sigmoiditis around multiple diverticula. A subsequent radical operation was performed, with recovery.

CASE 98 (Hulke (38), 1859).—Male, 57 years of age. Symptoms of vesical calculus. Two and a half years before he had passed fæcal concretions per urethram.

Necropsy.—Stenosis of the sigmoid flexure from chronic inflammation round numerous diverticula. One had become adherent to and perforated the bladder.

CASE 99 (Morison (50)).—Male, 50 years of age. Stout. Three years symptoms of vesico-intestinal fistula.

Necropsy.—The sigmoid flexure was thickened and narrowed; at about the junction of the first and second parts of the rectum the gut was constricted by a narrow membranous band so that the lumen just admitted the tip of the little finger; stenosis of the gut in all three inches. Above and below this constriction were several "pits" in the mucous membrane; some were ulcerated at the extremity. A probe

was passed from the bowel through one of these into an abscess cavity and thence into the bladder. (The diverticular origin of this case was evidently not recognised by the author.)

CASE 100 (Hepner (33), 1902).—Female, 64 years of age. Life-long constipation; thin; 14 months before, pain on micturition and defæcation coming on suddenly after lifting a heavy weight; abdominal pain and fever. Passed fæcal masses and a pear-pip in the urine. Diagnosis: fistula between the bladder and the bowel due to a previous attack of appendicitis.

Operation.—A communication between the bladder and the sigmoid flexure, 12 centimetres above the rectum was found. This was due to the presence of a diverticulum lined with mucous membrane, two and a half centimetres long and one centimetre wide. Recovery.

CASE 101 (referred to by Moynihan (51)).—Vesico-colic fistula of diverticular origin.

CASE 102 (Waldvogel (74), 1902).—Male, 35 years of age. Long history of difficult urination. Signs of fistula about a year before death.

Necropsy.—Marked stenosis of the sigmoid flexure from inflammatory thickening; above this is a row of deep diverticula. The thickened and stenosed area is adherent to the bladder; six openings—two lined by mucous membrane—lead from the gut into the tissue intervening between it and the bladder, and two of these enter the bladder directly. The gut also communicates with an abscess cavity containing fæculent material and a comparatively fresh apple-seed.

CASE 103 (Czerny, quoted Waldvogel).—Vesical fistula. Somewhat similar case.

CASE 104 (Herczel (34), 1889).—Male, 48 years of age. Irregular bowel action. Five months' symptoms of entero-vesical fistula with passage of air and fæces per urethram. Stricture of the bowel 12 centimetres from the anus; tumour felt in the left iliac fossa. Carcinoma of the sigmoid flexure diagnosed; at operation the bowel was found to be adherent to the bladder. Subsequent colotomy and death.

Necropsy.—Multiple diverticula containing fæcal matter in the whole of the rectum; one had given rise to fistula; stenosis of the bowel; small abscess cavity outside of it. The fistula was 26 centimetres above the anus.

CASE 105 (Heine (32), 1904).—Male, 73 years of age. Diverticulum of the sigmoid flexure adherent to the bladder. Also a vesico-colic fistula, *probably* of the same nature.

It will be observed that many of the foregoing cases are marked with an asterisk (*), denoting, it should be explained, that they are previously inedited cases.

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Leeds.

A CASE OF DIAPHRAGMATIC HERNIA.

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THE following case was admitted to the Metropolitan Hospital on Nov. 9th, 1907, under the care of Dr. Edmund Cautley, for shortness of breath. The child, a girl, aged nine months, born at full time, apparently healthy, was breast-fed, and did well until a fortnight before admission when she had an attack of vomiting and became short of breath. During this fortnight vomiting continued and she lost flesh rapidly. There was nothing of importance in the family history. On admission the child was pale and thin; the flesh was flabby and the skin was inelastic. The eyes were dull and sunken. The temperature was 99° F., the pulse was 132, and the respirations were 60. The apex beat was best felt about one inch to the right of the sternum in the sixth intercostal space. The superficial area of cardiac dulness was obliterated. The heart sounds were natural. The right side of the chest was resonant all over, the resonance extending in front to the costal margin. Breath sounds were distinct all over this area. On the left side there was dulness to percussion over the left lower lobe behind, extending to the mid-axillary line. No breath sounds were heard over this area but an occasional râle was heard in the left axilla. The signs over the upper lobe were natural. The abdomen was large and distended and the edge of the liver could be felt below the umbilicus. The spleen was not palpable. On the 11th the note was still dull over the left lower lobe behind reaching to the mid-axillary line. Distant breath sounds were heard over this area and a patch of friction at the base and at the apex of the lower lobe. There had been no vomiting since admission. On the 15th the child vomited four times and had five loose undigested stools. There was a much better note over the left lower lobe, but the breath sounds were still absent. On the 19th vomiting continued. The patient would not take food and had to be nasally fed. She had lost five ounces in weight since admission. The note was quite dull over the lower lobe and no breath sounds could be heard. The chest was explored in two places with negative results. On the 25th the general condition of the child seemed much better. She had gained five ounces in the last six days. The respirations were now 32, but the temperature was a little raised. The vomiting stopped. The note over the left lower lobe was now quite resonant but no breath sounds could be heard. On the 28th the note over the left lower lobe was resonant. The breath sounds were distinctly heard over this area. No râles were heard. The patient vomited once during the last seven days. On Dec. 2nd she was gaining weight. There was no more vomiting. The note was resonant over the left lower lobe. No breath sounds were heard. On the 5th there was some consolidation of the right lower lobe. The temperature was 104°. On the 9th there was recurrence of vomiting and the patient was losing weight. On the 10th respiration was shallow and rapid. The child was cyanosed. There was a good note over the left lower lobe. No breath sounds could be heard. The abdomen was distended. On the 11th there were considerable cyanosis and dyspnœa. The left lower lobe was resonant. The child died from failure of respiration.

Necropsy.—The body was that of a small child, sparsely

covered. On opening the abdomen only the liver and stomach were to be seen. The liver, which weighed 11 ounces, was rotated upon a horizontal transverse axis—the upper and anterior surfaces presenting—and reached downwards to the symphysis pubis. The remaining part of the abdomen was occupied by the stomach. The stomach was much dilated, its walls were slightly thickened, and the pylorus especially was thicker and longer than usual. The left pleura was almost completely occupied by intestine, the lung lying in a collapsed condition at the apex. The whole of the intestinal canal between the third part of the duodenum and descending colon had passed through a hole in the posterior part of the diaphragm on the left side and occupied the left pleura, and passing out of this hole was the descending colon. There was no sac to the hernia. The herniated mass was easily reduced into the abdomen and along with it came the left kidney. The intestines were natural. There was no sign of strangulation. The heart was lying completely to the right of the left border of the sternum, the apex projecting to the right. The heart was otherwise normal. The right lung showed a little broncho-pneumonic consolidation at the lower lobe. The upper lobe was incompletely divided into two lobes. The opening in the diaphragm was about 3 by 2 inches—oval in shape. The edges were smooth and surrounded by muscle. The peritoneum was continuous with the left pleura over the margin of the opening. The spleen was in the abdomen and was natural, as was also the right kidney.

The occurrence of diaphragmatic herniæ is easily explained on reference to the manner of development of the diaphragm. Five elements enter into its formation: one median, two ventro-lateral, and two dorso-lateral. The median and ventro-lateral elements are first developed and together form the septum transversum. The two dorso-lateral elements are developed later and unite with the septum transversum to form the pleuro-peritoneal septum which shuts off the pleural from the peritoneal cavity. Hence the occurrence of diaphragmatic herniæ at the posterior part of the diaphragm, and owing to the manner in which the liver is developed they are much more common on the left side.

Two varieties of diaphragmatic herniæ have been described according to the period of development. 1. Embryonic type, which are formed before the complete closure of the pleuro-peritoneal septum, and therefore have no sac. These may be complete, when the whole of the dorso-lateral element is absent, or incomplete, when it is only partially absent. The above case was one of incomplete embryonic diaphragmatic hernia. 2. Congenital or fœtal: in these cases the pleural and peritoneal surfaces are formed but the muscular tissue of the diaphragm is imperfect. Hence in these cases there is a sac. A third type is "acquired," and is due to protrusion through an abnormally large normal orifice, such as that for the œsophagus.

Out of 481 cases collected by Paillard 80 per cent. were on the left side. Out of 130 cases observed by him 74 were complete embryonic diaphragmatic herniæ, of which only 18 occurred on the right side, and in 14 of these the liver was partially within the pleural cavity. In this case a diagnosis of pleural effusion on the left side was made but the sudden variation in the percussion note, which, according to Dr. Cautley, is due to the varying contents of the gut and the position of the liver, ought to have made one think of diaphragmatic hernia.

I am indebted to Dr. Cautley for permission to publish this case.

Note by Dr. CAUTLEY.—A diagnosis of diaphragmatic hernia is rarely made during life because of the difficulty and largely because it is not suspected. In the present instance the dulness at the left base at first was ascribed to effusion and, as the amount of effusion assumed to be present could not have been large enough to account for the position of the heart, transposition of that viscus was suggested. Subsequently the high-pitched resonance with absence of breath sounds and cardiac displacement could only be explained by diaphragmatic hernia. It was extraordinary how little distress the child suffered. In a case of diaphragmatic hernia on the right side under my care in 1905[1] there was great recession of the lower ribs and the child had many attacks of dyspnœa and cyanosis. In both instances exploration proved harmless. No doubt the intestines receded in front of the needle, for no evidence of puncture occurred at the time or was found after death.

[1] THE LANCET, Nov. 18th, 1905, p. 1472.

A CASE OF MERALGIA PARÆSTHETICA SUCCESSFULLY TREATED WITH THE CONSTANT CURRENT.

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CASES of this condition are sufficiently rare to be placed on record, the more so because it is liable to crop up anywhere and at any time, and in the absence of any information regarding it an error in diagnosis is inevitable. Personally I was unacquainted with the existence of the disease until three years ago when I was consulted by a native Indian gentleman who had come to England for advice fearing he had contracted anæsthetic leprosy. He was a graduate of Cambridge and had a command of our language that might put many an English-speaking colonial to the blush, so that there was no difficulty in obtaining a very complete history of the case. I was, however, able to exclude everything I could think of that it might be, so I took him to see Dr. Henry Head, when I received my first introduction to this interesting condition.

For the benefit of those who are unacquainted with it I may say that meralgia paræsthetica is also known as Bernhardt's affection of the sensibility (*Sensibilitätsstörung*) and relates to the distribution of the external cutaneous nerve in the thigh. It is characterised by pain, numbness, a "dead or wooden feeling," or anæsthesia on the front and outer side of the thigh corresponding to this distribution. One of these symptoms generally predominates, the others being present in varying degrees or at different times. In some cases there is a feeling of tightness, as if there was insufficient skin to cover the part comfortably or that the part was bandaged. Probably the great predisposing cause to which all others are subservient is the superficial course of the nerve and the way it pierces the fascia lata. In occupations calling for extra tension on this fascia—the "hound-jog" in hunting, the blacksmith's hammerman, &c.—the nerve tends to become "nipped" at this point. In other cases trauma would seem to be the cause. It is also possible that the nerve sometimes passes in front of rather than behind the origin of the sartorius muscle, and is thus all the more exposed.

Morbid anatomy has given little assistance as to the pathology of the disease up to the present. Bramwell[1] mentions a case recorded by Nawratzki in which a spindle-shaped swelling about one centimetre in length was discovered on each external cutaneous nerve at the place where it crossed the anterior superior iliac spine. The microscope showed a localised perineuritis with associated interstitial and parenchymatous changes in the nerve. Those who desire to obtain more information than can be given here should refer to the paper by Bramwell which gives an excellent *résumé* of the literature up to 1903 as well as a very complete bibliography.

In my first case, above referred to, I could ascertain nothing in the way of a definite cause, while anæsthesia was the predominating symptom.

In the second case, a barrister, the cause appeared to be a swinging bar placed across one of the ways into Lincoln's Inn-fields, which he struck with the thigh as he passed through, and this happened the more frequently because of his very defective eyesight. Pain was the chief symptom here and was at times very distressing.

My third patient, a master of foxhounds, came to me on Nov. 7th last complaining of "lumbago," together with pain and numbness on the front and outer side of the left thigh. The pain was always worse after a day's hunting and seriously interfered with the night's rest. In between times numbness and a "wooden feeling" were the chief symptoms. On examination the "lumbago" turned out to be a dull pain in the sacral region, to which I attached no special importance and it entirely disappeared in a few days. The symptoms were first noticed about three weeks before. There was a slight tenderness on pressure just below the anterior superior iliac spine and the area of numbness and pain corresponded very accurately to the distribution of the external cutaneous nerve. That there was no definite disturbance of the various sensations of touch, pin-prick pressure, heat, and cold I attribute to the fact that I saw the case early and before any organic changes in the nerve had taken place. To

[1] Edinburgh Medical Journal, July, 1903.

this same fact I attribute the success of the treatment employed.

The form of treatment in which I am particularly interested—viz., electricity—has been frequently tried in this disease but with disappointing results. When I came to look into this matter I found that in every case the method employed was the faradic current applied by means of a wire brush. Bearing in mind that pain is a usual if not the chief symptom it is strange that a method should be used which from its very nature was practically bound to make the condition worse. Indeed, if any benefit took place after such applications, I should say it could only be in spite of, rather than on account of, such treatment.

Except in those very rare cases of neuralgia where the counter irritant action of an induction coil is useful, pain is a direct contra-indication for the use of induction coil or rapidly varying currents of any kind. Is it any wonder then that electrical treatment has so far been unsatisfactory in the treatment of this condition? It would never occur to me to use any but the constant current, in the first instance at least, but it was only in the last case that it was given a fair trial. In the first the patient was so overjoyed to find he had not anæsthetic leprosy that he took the first available ship to India without waiting to undergo a thorough course of treatment. In the second the patient was so disappointed at not being completely relieved after some half-dozen applications that treatment was given up. The case was one of considerable standing, and patience and persistence were necessary to get good results. In the third case treatment was begun early. The indifferent electrode—negative—was placed across the lumbo-sacral region, while the active electrode was applied over the affected area, and especially over the place where the nerve pierces the fascia. This electrode was one of 100 square centimetres area and was moved to a fresh part of the affected area every two or three minutes. The current passing varied between 30 and 50 milliampères. Definite improvement began after the third application and steadily progressed. Eight applications were given in all, the last being on Dec. 10th, 1907. The patient has remained perfectly well ever since but in view of his hunting proclivities recurrence is not improbable.

Queen Anne-street, W.

PERFORATION OF THE ŒSOPHAGUS BY A RABBIT BONE:

SEPTIC INFLAMMATION OF THE MEDIASTINUM; ULCERATION INTO THE AORTA; DEATH FROM HÆMORRHAGE.

BY R. LAWFORD KNAGGS, M.C. CANTAB.,
SURGEON TO THE LEEDS GENERAL INFIRMARY.

A YOUTH, aged 16 years, was eating some rabbit-pie when something "stuck in his throat." After his meal he went to see a football match and on his return he vomited. From that time he had had a painful sensation in the lower part of the sternum and had taken practically no solid food, but this was apparently because he had no appetite for it and not from any difficulty in swallowing. Two days after the occurrence he went to the Leeds General Infirmary and the resident casualty officer passed a probang into the stomach without meeting any obstruction. In the interval before his admission on the seventh day, the patient stated that he had been under the care of a medical man who said that he was suffering from pneumonia. On the day of admission he began to vomit large quantities of bright blood and he passed dark blood from the rectum two or three times.

When admitted to the infirmary the lad was extremely ill, very pale, sweating profusely, and mentally quite clear. He was not in pain. He brought up a small amount of bright frothy blood. The pulse was 130 and poor, the respirations were 30, and the temperature was 98° F. There was a definite pericardial rub and signs of fluid at the base of the left chest, which on exploration proved to be thin turbid odourless serum. Death occurred four hours after admission.

Post-mortem examination by Dr. G. W. WATSON.—On opening the body there was marked œdema of the tissues over the front of the chest. When the sternum was removed an acute inflammation of the tissues in the mediastinum was found. The soft tissues of the whole mediastinum extending quite down to the diaphragm, but chiefly affecting the upper part, were of a dirty greyish-black colour and there was also a little exudation. There was no offensive odour. The pericardium was adherent to the pleura on the left side and when the sac was opened *in situ* an extensive simple plastic pericarditis was revealed. There was slight recent pleurisy in the left chest and about half a pint of turbid effusion. In the œsophagus, about three inches below the cricoid cartilage, were two perforations situated opposite to one another, as if caused by something that had lain transversely and been impacted in the tube. There was very little sign of inflammatory reaction of the tissues in these situations. The perforation on the left side extended into the cellular tissue for about an inch. On the right side a probe could be passed through the other opening in the œsophagus into the middle of the dirty-looking material in the mediastinum. Further investigation showed that the abscess in the mediastinum had ulcerated into the aorta just at the commencement of the descending portion of the arch on its upper and posterior aspect. The ulcerated aperture was three-quarters of an inch distant from the origin of the left subclavian artery. A probe could be passed without any force whatever from the œsophagus into the aorta. No bone could be found anywhere. All the abdominal viscera were quite healthy, but the stomach and intestines were full of pure blood. The blood in the stomach formed a large clot which was a complete cast of that viscus and from it there was a prolongation into the œsophagus for several inches. At the other end the pyloric portion was continued into a cast of the first and second parts of the duodenum.

Leeds.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

MEDICAL SECTION.

Phagocytosis carried out by means of Melanin.—Administration of Tuberculin (T.R.) and other Vaccines by the Mouth, together with (a) Normal Saline Solution; and (b) Fresh Horse Serum.

A MEETING of this section was held on March 24th, Dr. S. J. GEE, the President, being in the chair.

Mr. S. G. SHATTOCK and Mr. L. S. DUDGEON communicated some observations upon Phagocytosis carried out by means of Melanin, more particularly with reference to the part taken by the leucocytes in infective diseases.[1] When melanin (from the eye of the ox) in salt solution was mixed with immune blood the phagocytosis might be below normal, or normal, or considerably higher. Melanin was opsonised. An immune serum could be largely deopsonised by saturation with melanin. That could only result from opsonisation of the melanin. Conversely, saturation of a tuberculous serum with tubercle bacilli largely reduced the phagocytosis of melanin. That showed that the chief increase of opsonin was not of a specific kind. The phagocytosis of melanin, however, was diminished after heating the immune serum. In this Mr. Shattock's and Mr. Dudgeon's observations accorded with those of R. Muir and L. B. M. Martin, which proved that thermolabile opsonin (in normal blood) was non-specific, since it could be removed by very different micro-organisms. Mr. Shattock and Mr. Dudgeon maintained that the leucocytes of immune blood were in some cases more active than those of normal blood. An increased phagocytosis of melanin occurred in some cases if melanin was presented to the "washed" leucocytes of an immune blood in normal serum, as compared with washed normal leucocytes in normal serum; or, if melanin was presented to "washed" immune leucocytes in immune serum, and to "washed" normal cells in immune serum, the ingestion done by the patient's cells was in many cases greater than that done by normal cells. They concluded, therefore, that the calculation of the opsonic value of the patient's serum alone did not give a complete estimate of the patient's hæmophagocytic resistance; it might be too high or too low, or as a coincidence it might exactly represent it. The method of making a hæmophagocytic estimate

[1] This communication is based upon one made to the Royal Society of London through Professor J. Rose Bradford.

was considerably simpler and more rapid than the estimation of the opsonic value of the serum alone, which entailed washing normal cells and collecting blood in order to obtain both normal serum and the serum of the patient. It was merely necessary to draw up one volume of the patient's blood and one volume of a citrated salt suspension of the micro-organism to be used into the capillary tube, to mix, incubate for 20 minutes, spread the film, and compare the phagocytosis with that of one volume of normal blood similarly treated—a slight modification of the technique practised by Leishman. The only thing that would vitiate the estimate obtained by taking the hæmophagocytic as distinguished from the opsonic index would be evidence of an additional formation of opsonin *in vitro* during the 20 minutes in which the capillary tube containing the immune serum, the immune cells and melanin, or bacteria, was being incubated. That possibility Mr. Shattock and Mr. Dudgeon excluded by the following experiment: one volume of washed immune cells was thoroughly mixed with one volume of immune serum, having larger volumes than usual. The mixture was then drawn up into three capillary tubes of the usual calibre and incubated for 20 minutes, 30 minutes, and one hour. At the end of these intervals an equal volume of citrated salt suspension of living colon bacilli was added to the contents of each capillary tube, mixed, and each tube then incubated for 20 minutes. By that means a full supply of active immune cells were allowed to act in immune serum for different periods; the phagocytosis was then tested in each one after the same time allowance—viz., 20 minutes. The phagocytosis was the same in all. It might be held, thus, that the hæmophagocytic index, whether higher or lower than the opsonic, represented more accurately the blood resistance; if higher, that was not due to additional formation of opsonin in the drawn blood, and so fallacious, but to feeble activity on the part of the immune cells.—Sir A. E. WRIGHT said that the subject of the paper was not in a strict sense medical. The question whether opsonins were produced *in vitro* was remote from medicine. He considered that in discussing the avidity of white cells it was important that the number of white cells present should be stated, for without that fact the results could not be depended upon.—Mr. SHATTOCK, in his reply, said that he and Mr. Dudgeon considered that their communication had a very marked relation to medicine, because it concerned the estimation of the patient's resistance, and surely that was medicine. In the pneumonia cases which they had brought forward the height of the indices marked the fact that the white cells were doing more work than normal cells. In regard to the number of white cells it must be remembered that in blood taken from a case of pneumonia the number of leucocytes was greater than in normal blood.

Dr. ARTHUR LATHAM, in conjunction with Dr. H. R. D. SPITTA and Dr. A. C. INMAN, communicated a preliminary note on the administration of Tuberculin (T.R.) and other Vaccines by the Mouth, together with (*a*) normal saline solution, and (*b*) fresh horse serum. They stated that the treatment of disease due to bacterial invasion by vaccines gave brilliantly successful results in many cases. The hypodermic injection of Koch's tuberculin in pulmonary tuberculosis not only increased the percentage of arrested cases in those undergoing sanatorium treatment but diminished the tendency to relapse. The use of tuberculin and other vaccines on a large scale had been attended with great difficulty owing to (1) the fact that the hypodermic method of administration had to be employed; and (2) the necessity in most instances of making frequent estimations of the opsonic index in order to determine the proper intervals between the doses. One of the objects of the investigation was the simplification of their present methods. On the assumption that immunity against certain diseases was often due to the absorption of the products of dead micro organisms from the alimentary canal, it was decided to try the effect of administering various vaccines by the mouth. In the treatment of disease of bacterial origin the production of antibodies which had a direct effect on the specific poison was not always sufficient. The opsonic index might be raised but the progress of the disease might continue unabated. In other cases there might be no response to vaccination. Again, in tuberculosis the fact that the destruction of tissue varied immensely in different cases suggested that something besides the direct effect of tuberculin had to be considered. Those facts might be due to some deficiency in the patient's serum. There was a considerable amount of clinical evidence of the value of various antisera, such as antidiphtheritic serum, in diseases other than the specific disease. It was probable that some of those effects were due to the action of horse serum. There was also evidence of the value of horse serum in hæmorrhagic conditions of toxic origin and certain other conditions, whether administered by the skin, mouth, or rectum. Fresh horse serum was therefore given in a number of cases in order to determine whether it was able to supply some substance in which a patient's serum was deficient, or to stimulate the production of some such substance, or whether it had any other action. The investigation was commenced at St. George's Hospital. The treatment was carried out on purely clinical considerations; at the same time, Dr. Spitta made daily observations of the opsonic index in a number of the cases. At the end of three months, a considerable amount of information having been obtained, patients were also treated at the Brompton Hospital for Consumption. At that hospital the patients were seen daily in consultation with Dr. Inman, who made a large number of observations of the opsonic index. The cases treated embraced cases of advanced pulmonary tuberculosis, tuberculous peritonitis, tuberculous disease of the glands and hip, and cases of streptococcic, staphylococcic, and pneumococcic infection. Evidence, clinical and bacteriological, was brought forward to show that—(1) satisfactory immunisation could be produced by the administration of vaccines by the mouth; (2) in tuberculosis and other diseases of bacterial origin in which fever was present there was a definite relation between the curve of the opsonic index and the temperature, and that the more frequently the index was determined the more definite was that relation; (3) in such diseases the temperature, even when normal or subnormal, afforded some guide to the changes of phase in the opsonic index; and (4) horse serum in certain cases had an effect on the opsonic content of the blood.—Dr. F. W. FORBES-ROSS described certain investigations which he had carried out and published in the *New York Medical Journal* of Nov. 9th, 1907.—The discussion was then adjourned.

PATHOLOGICAL SECTION.

Larvæ of Eristalis Tenax Passed by the Bowel.—Enlargement of Hen's Comb Produced by Injections of Testicle Extract.—The Relations of Endothelioma to other Forms of New Growth.—Prickle Cells in Tumours.

A MEETING of this section was held on March 17th, Mr. S. G. SHATTOCK, the President, being in the chair.

The PRESIDENT read a paper on the Larvæ of Eristalis Tenax passed by the Bowel. He exhibited some that were passed with many more, in the living state, by a woman who had recently arrived from France where she had eaten much watercress. The larvæ were identified by Mr. E. E. Austen as those of the dipterous fly, *Eristalis tenax*. The larvæ, which were as large as tadpoles, were furnished with a respiratory proboscis or "tail," and were commonly known as "rat-tailed" larvæ. Oviposition took place upon material at the surface or edge of water, and the ova (about one millimetre in length) had presumably been ingested concealed in watercress. As one of the habitats of the larvæ was sewers there was nothing incongruous in their development in the intestinal contents. The oxygen for respiration during their development in the intestinal canal would be provided by the air swallowed. A considerable number of cases of intestinal myiasis had been recorded, but the larvæ passed were usually those of different species of homalomyie. No example of eristalis had been before observed in this country and only two or three cases had been placed on record abroad. The fly itself closely resembled an ordinary drone and entomologists had pointed this out as the explanation of the ancient method of raising "bees" from the decomposing carcass of an ox, described by Virgil in the fourth book of Georgics.

Mr. C. E. WALKER communicated a paper on the Influence of the Testis on the Secondary Sexual Characters in Fowls He referred to the previous work bearing upon this subject carried out by Shattock and Seligmann and pointed out that the object of the experiments which he (Mr. Walker) described was to ascertain whether certain groups of cells in fowls of both sexes possessed the potentiality of developing in a particular way under a suitable stimulus. This stimulus, he claimed, was shown by his experiments to be supplied by the

testis throughout its functional activity. The nature of his experiments was briefly as follows. He injected two hens with a fresh preparation of cock's testes beginning on Feb. 1st, 1907. The injections were continued every day until Oct. 4th with the following results. The combs and wattles of the hens grew to a very large size and the hens stopped laying eggs about the middle of March. This growth of the combs and wattles seemed to reach its maximum at about the end of June. From March to October these hens seemed always to wish to attack any cock which was placed in the greenhouse where they were kept. On Oct. 4th the injections were discontinued and on Nov. 9th the combs and wattles had shrunk back to the normal size found in the hens before the experiment was commenced. The size of the combs at the maximum was about eight times that found in the same hens before the experiment and after Nov. 9th. In two cases Shattock and Seligmann had recorded a shrinkage of the comb after castration of the adult cock.

Dr. W. S. LAZARUS-BARLOW read a paper on the Relations of Endothelioma to other Forms of New Growth. He brought forward the view that certain varieties of growth met with chiefly in the breast and the cervix, and generally described respectively as spheroidal cell and squamous-cell carcinoma, were identical in appearance and differed from typical carcinomata of those types by the presence of lumina, by the characters of the cells and their nuclei, and by the general arrangement of the cell masses. He then pointed out that these characters, together with a great tendency to variation in appearance in mestatases, were best to be explained on the view that they had originated from endothelium. He advocated the same view for uterine growths that appeared to consist of both carcinoma and sarcoma and for a large number of those mouse tumours which showed a great deviation from the original tumour after repeated transplantation. Upon this view about 10 per cent. of uterine and mammary carcinomata were endotheliomata.—Dr. E. F. BASHFORD pointed out how the investigation of mouse cancer was of the greatest importance because of its freedom from the limitations necessarily attaching to the clinical and pathological study of cancer. He referred to Gierke's work showing that mouse tumours were epithelial and not endothelial and explaining how the peculiarities of mouse tumours ceased to be of importance when the differences between the histology of the mouse and of man were understood. In considering spontaneous tumours of the mouse as opposed to inoculated tumours it must be remembered that the anatomical conditions were distinct. In the case of spontaneous tumours infiltration of the thoracic walls and of the muscles and of the skin was common. In the case of the transplanted tumours he acknowledged that infiltration occurred in a small proportion of cases, but when a mass of tumour pulp was introduced under the skin of the mouse there was established a different condition of things from that found in the development of a new growth. Therefore in experimental work conditions were not induced exactly corresponding to those seen in spontaneous tumours.—Dr. L. COURTAULD also spoke.

Mr. C. W. ROWNTREE read a communication dealing with the Presence of Prickle Cells in Tumours originating, or supposed to originate, in squamous epithelium. He pointed out that as prickles were of such constant occurrence in this situation it might be supposed that new growths which originated there would contain them. He stated that this was generally the case both in the primary growth and its metastases, but that there was a class of tumour originating in situations such as the tongue and cervix uteri which departed from the common type in that they did not possess prickles and also had other points of similarity which suggested the possibility of their constituting a separate class of new growth.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

Myomectomy during Pregnancy.—Difficult Labour.

A MEETING of this section was held on March 12th, Dr. HERBERT R. SPENCER, the President, being in the chair.

Dr. WALTER C. SWAYNE read a short communication on Myomectomy during Pregnancy and described two cases operated on by him. Case 1: A primipara, aged 40 years, pregnant five months, had a solid, rapidly increasing, painful tumour growing from the fundus uteri. After laparotomy a pedunculated fibroid of the size of an adult head was removed from the fundus. The flattened pedicle was transfixed and the peritoneum was sewn over it. A smaller fibroid, which was sessile and situated behind and below the first, was also enucleated. Recovery was uninterrupted. Pregnancy had not been interrupted two months later, after which the patient was lost sight of. Case 2: Multipara, aged 35 years, pregnant four and a half months, with abdominal pain and a bilobed tumour rising out of the pelvis, the left lobe being hard and the right soft and elastic. Laparotomy showed a fibroid growing from the right cornu of the pregnant uterus which had undergone axial rotation, so that the fibroid lay on the left. The rotation was untwisted with some difficulty and the fibroid was then enucleated. Pregnancy was interrupted a month after the patient left the hospital. Dr. Swayne pointed out that fibroids of the pregnant uterus required operation if causing pain, pressure symptoms, axial rotation of the uterus, or symptoms of twisted pedicle. Rapid increase with pain might point to degeneration. Pregnancy was not necessarily interrupted. Accurate apposition of the gap in the uterine wall was of great importance

Dr. J. H. DAUBER communicated a case of Pregnancy complicated by a large and fixed Retroperitoneal Fibromyoma which completely blocked the pelvis besides filling the abdomen. The patient was a young married woman three months pregnant. She had become alarmed at her rapidly increasing abdominal girth. Operation took place on Dec. 20th. All the resources of surgery were needed to control the hæmorrhage after enucleation of the tumour. Chiefly on this account it was found impossible to preserve the uterus. The case was an example of a fibroid of such dimensions and so situated that neither delivery *per vias naturales* nor progression to full term was possible and early operation was the only safe line of procedure. In this instance recovery was rapid and complete.—In the discussion on these communications the PRESIDENT said that, while not criticising the three cases reported, in which the operations were done for definite and serious indications, he felt bound to express his strong opinion that operations in the case of fibroids complicating pregnancy were rarely called for and that myomectomy, which was occasionally urgently demanded in the case of very large, or impacted, or rotated tumours, was in relation to the frequent occurrence of this complication of pregnancy very rarely required and, as the cases exhibited that night showed, was attended by considerable risk. When practicable, the operation should be postponed till the child was viable.—Dr. F. H. CHAMPNEYS entirely endorsed the remarks made by the President. He had himself had a long experience of pregnancies complicated by fibroids. It was true that in exceptional cases he had been compelled to adopt serious measures, such as Cæsarean section, but he had frequently been consulted in cases in which the presence of a fibroid had caused alarm to the medical practitioner, but, without any interference, the patients had borne, not one child, but a series, with perfect ease and safety. In his experience the cases requiring serious interference were extremely rare.—Dr. G. E. HERMAN agreed with the last speaker that the mortality of myomectomy in pregnancy, as quoted in the statistics mentioned by Dr. Swayne, was much too high. He narrated a case where he had enucleated a fibroid from a pregnant uterus and the woman was delivered six months later of a full-term child.—Dr. AMAND ROUTH agreed with Dr. Swayne's statement that fibroids complicating pregnancy should not be interfered with unless producing urgent symptoms. Unfortunately, Dr. Swayne had quoted statistics, somewhat obsolete in date, tending to show that fibroids were so serious a complication of pregnancy that operations were frequently justifiable. Dr. Routh thought these statistics quite untrustworthy. He had collected statistics[1] showing that the maternal mortality of such cases under modern methods was only slightly in excess of the normal and that the danger to life was not so much due to risks during labour but to sepsis afterwards, for if the endometrium became infected a submucous or an intramural fibroid almost always became infected also. He showed that abortion did not more often occur where fibroids were present, though labour often ensued a few weeks before full time, and urged strongly that no operation should be performed till fœtal viability, unless absolutely essential, so as to save the two lives involved. He had only twice had to perform Cæsarean hysterectomy at or near full term and never at an earlier date, though he had seen many cases of fibroids blocking the pelvis in the early months. The fibroids in such cases almost

[1] Brit. Med. Jour., Oct. 3rd, 1903.

invariably underwent flattening and softening (*assouplissement*) and were gradually or suddenly displaced out of the pelvis, sometimes as late as the onset of labour itself, and labour spontaneously occurred without assistance.—Dr. T. W. EDEN agreed with the previous speakers as to the rarity with which serious complications occurred when women with fibroids became pregnant and deprecated the view sometimes advanced that pregnant women with fibroids necessarily went in peril of their lives.- Dr. A. E. GILES said that speaking in generalities would lead to confusion and inaccuracy. To say that the complication of fibroids and pregnancy was generally unimportant was as much beside the mark as to say that it was generally dangerous. The existence of fundal fibroids might make no difference to pregnancy or labour but cervical fibroids impacted in the pelvis were in a totally different category. He alluded to a case in which he had removed a fibroid from the left broad ligament in a woman four and a half months pregnant. He experienced great difficulty in stopping the bleeding and though he succeeded at the time it recurred later, necessitating the removal of the uterus, as in Dr. Dauber's case.

A short communication was made by Dr. H. RUSSELL ANDREWS and Dr. R. DRUMMOND MAXWELL on a case of Difficult Labour, with remarks on the frozen sections of the uterus. The patient had been in labour for two and a half days before the resident accoucheur was sent for. He found a very large decomposing child presenting by the vertex. Attempts at craniotomy and cephalotripsy resulted in the whole of the head being pulled off and traction on the arms pulled both of them off. An attempt at version failed, the foot coming away without any alteration of position being effected. The patient was then sent into the London Hospital. When Dr. Andrews saw her the uterus was in a state of tonic contraction. He cut through both clavicles, perforated the chest, and removed the heart and lungs, perforated the diaphragm, and removed the liver and intestines. In spite of effecting diminution of the size of the child no form of traction applied by every conceivable variety of hook and forceps was successful and attempts at version met with no more success. It was impossible to cut through the fœtal spine. At last, after one and a half hours' hard work, realising that he could not deliver per vaginam, he removed the uterus with the child *in situ*, preferring hysterectomy to leaving the patient undelivered with the uterus in a state of tonic contraction. The patient died on the next day. The child, who had apparently reached the age of 44 weeks, must have weighed not less than 13 pounds. Frozen sections of the uterus, with fœtus *in situ*, were exhibited. A well-marked ridge projecting into the cavity of the uterus was the subject of considerable discussion, it being the opinion of Dr. Andrews and Dr. Maxwell that this represented the retraction ring. Post-maturity of the fœtus was discussed and the recorded cases were criticised. Sections of the placenta were also shown but did not throw any light on the etiology and pathology of the condition.—Dr. CHAMPNEYS said that he had felt contraction rings round various parts of the uterus, in some cases round one of the uterine cornua. The experiments of Kleinwächter showed that spontaneous delivery occurred in some of the most unpromising cases of obstructed labour. In such a case as that under discussion, where the patient was already septic, the choice of treatment was one of great difficulty.—Dr. W. S. A. GRIFFITH suggested that the probable cause of the difficulty in delivery was not in the uterus but in the macerated condition of the fœtus. He wished to emphasise the value of version as a means of delivery after craniotomy if the uterus was not in a state of tonic contraction.—Dr. EDEN remarked that the term contraction ring was inaccurate; it should be called the retraction ring. He could not accept the view advanced by Dr. Andrews and Dr. Maxwell as to the formation of this ring that it was the result of moulding on a body groove. —Dr. ANDREWS and Dr. MAXWELL replied.

MEDICAL SOCIETY OF LONDON.

Discussion on the Prognosis and Treatment of Acute Anterior Poliomyelitis.

A MEETING of this society was held on March 23rd, Dr. J. KINGSTON FOWLER, the President, being in the chair.

Dr. J. S. RISIEN RUSSELL, in opening the discussion, referred to the importance of excluding cases of Landry's paralysis and those of acute toxic polyneuritis before a true estimate of the prognosis in poliomyelitis could be obtained, for the former of these diseases was infinitely more fatal than poliomyelitis, while recovery from the latter was much more perfect than usually obtained in this affection. Even allowing for the possibility that some cases might die in the acute stage of the illness without being recognised poliomyelitis was by no means a fatal disease. It was, however, not safe to venture an opinion until there was evidence that there had been no extension of the paralysis for at least from 24 to 48 hours. Some return of power in the paralysed parts was to be expected even in the most severe cases that lived, but in a large proportion the amount of residual defect was most disappointing, although there were notable exceptions to this rule. The more rapidly power returned the better the chances of a good result. An electrical examination was of some value in forming an estimate as to which muscles were likely to recover most, as those which still responded to faradism after three weeks might be expected to make a good recovery. It did not, however, follow that a muscle which did not respond to the interrupted current after this period was not capable of some recovery, for in reality it was compatible with a considerable amount of improvement, although full recovery could never be expected. Attention was called to a class of case in which poliomyelitis was probably responsible for a uniform want of development of a limb in which, nevertheless, no one muscle was paralysed or specially atrophied and in which all of the movements could be performed. In this class of case, as in a case of acute poliomyelitis, a progressive muscular atrophy might be encountered later in life but this was a rare sequel. Beyond keeping the patient at rest in bed, with the skin and bowels freely acting, the less active treatment the better in the acute stage of the affection. Pain must, however, be relieved and if local applications failed morphine might be required. In the case of a child it was much more important to keep the patient quiet than to risk the disturbance caused by the attempt to counter-irritate the spine or to secure the prone position. Provided there was no fever and pain did not prevent it massage should be commenced in from ten days to a fortnight, and should be combined with passive movements to which resisted movements should be added in due course, while the patient was encouraged to practise the voluntary contraction of the muscles, no matter how slight a return of this there might be. In spite of statements that Dr. Russell had seen to the contrary treatment by a skilled masseuse was far superior to any rubbing that a child's mother or nurse could be taught to give. He was also compelled to differ from those who were of opinion that electricity was of no use in the treatment of the affection as galvanism was a most useful therapeutic agent. Drugs played an altogether unimportant part in the treatment of the disease beyond any general effect on the system that might be desired, although it was the rule to give strychnine in the hope that it might have a more direct influence on the course of the malady. While fully alive to the important advances that had been made in the surgical treatment of the affection he was of opinion that the other methods of treatment should be fully tried before recourse was had to surgery. He, however, warned physicians not to be too conservative but to avail themselves of the assistance of the surgeon at the proper time, for in a large proportion of cases there was much that he could do to supplement the medical treatment of the case. While strongly deprecating the use of heavy and cumbersome instruments to effect this he hoped that physicians would be careful to adopt such measures in treatment as were calculated to prevent deformities and not lay themselves open to the charge that they had allowed to occur what the surgeon would have prevented. He hoped to hear from surgeons who were to take part in the discussion the relative merits of the different surgical measures that were in vogue and how the best results were obtained. The field for tendon transplantation must be much wider than that for nerve grafting, which must be applicable to but a small proportion of cases. Some attempt should be made to arrive at a general agreement as to the time when these operations as well as that of arthrodesis with a view to obtain fixation should be performed.

Dr. C. E. BEEVOR thought in regard to prognosis that the electrical reactions were important; if a muscle reacted to faradisation three weeks to a month after the onset of the illness then the prognosis would be that the muscle would recover; as long as there was galvanic reaction there was the chance of recovery and even up to 12 months from the

illness there was always hope. It was only when the muscle did not react to either galvanic or faradic stimulation that the case could be regarded as hopeless.

Mr. A. H. TUBBY said that the intelligent anticipation of possible deformities from the disease was a most important part of the duty of the physician. He considered that the very first thing to do with a paralysed muscle was to relax it. Nerve grafting should be reserved for those cases in which neither all the muscle was paralysed nor all the irritability had disappeared.

Dr. L. G. GUTHRIE pointed out the drawbacks of taking the electrical reactions in a child. In those cases where the electrical reactions were found to be absent it did not follow that the reactions would not return.

Dr. F. E. BATTEN could not agree that galvanising should be recommended in the treatment of the disease. Where it was impossible to secure skilled massage they must educate the mother of the child to carry out the treatment and a considerable amount of good could be done by unskilled massage under proper instructions.

Mr. ROBERT JONES concurred with what Mr. Tubby had said and described some cases in which treatment by posture had been successful.

Dr. E. FARQUHAR BUZZARD said that they must not be content with the treatment applicable to those cases after the diagnosis had been made but must strive to discover some prophylactic measure.

Dr. F. J. POYNTON observed that the management of cases with limbs with isolated paralysed muscles was much more difficult than the management of those cases where the limb was generally wasted; in the last named the limb though it might be small was extremely useful afterwards.

After the PRESIDENT had pointed out that it was most desirable that the cause of the disease should be treated and had commented on the value of properly applied skilled massage,

Dr. RUSSELL replied.

SOCIETY OF ANÆSTHETISTS.

Spinal Anæsthesia.

A MEETING of this society was held on March 6th, Dr. R. J. PROBYN-WILLIAMS, the President, being in the chair.

Mr. H. PERCY DEAN read a paper on Spinal Anæsthesia. He referred to the rapid progress of this method on the continent, and pointed out that it was now four years since the discovery of stovaine by the French chemist Fournier, and that for three and a half years spinal anæsthesia with stovaine, novocaine, and similar bodies had been practised with very satisfactory results on a large scale abroad. Progress had not been nearly so rapid in this country, this being probably due to the conservative tendency of the English mind and to the generally excellent results of inhalation anæsthesia. In the great majority of cases the surgeon did not feel inclined to urge, nor did he feel justified in urging, a new method which, having the technique of spinal anæsthesia, was not free from the risk of what Paget had called "a surgical calamity." A layman interested in hospital work had objected that the sticking of a hollow needle into one's spinal column could not possibly be justified or compared with inhalation anæsthesia. Mr. Dean thought this objection of little weight if the effect on the lay mind were recalled of the first sight of a Clover's inhaler and other features of general anæsthesia. From his own experience he was convinced that in serious cases to which he had limited its employment the patient gained a great advantage, and he felt sure that the new method had come to stay and would gradually displace general anæsthesia in cases within its radius of action—viz., serious abdominal disease, injuries associated with shock, and operations accompanied by shock. Mr. Dean then considered the great advantages of the new method under the following headings. 1. The effect of spinal anæsthesia in preventing shock. He instanced two recent cases of his at the London Hospital which had impressed him with the remarkable freedom from surgical shock which the method conferred. 2. Certain grave abdominal diseases. He referred to grave general symptoms found in cases of peritonitis and intestinal obstruction. He had employed spinal anæsthesia in several cases of general septic peritonitis in which the typical symptoms of so-called peritonism were present. After the injection the patients had expressed themselves as feeling much better; indeed, one of the patients, a girl aged 16 years, volunteered the statement within seven minutes of the injection that she felt quite a different person. 3. Cases of general collapse in which a general anæsthetic would almost certainly have caused the death of the patient; cases in which there was general collapse of the heart and muscular system, together with general grave toxæmia. As a typical instance of this condition he mentioned a man, aged 52 years, admitted with a strangulated hernia of three days' duration. 4. Cases with marked bronchial and pulmonary symptoms. With spinal anæsthesia the condition of the chest was not affected. From his own experience Mr. Dean had come to the definite conclusion that it was the duty of the medical profession to give patients in any of these classes the advantage of spinal anæsthesia and that many lives would thereby be saved. In considering the important question, Should spinal anæsthesia be used as a routine method in all surgical cases? he quoted the experience of several patients who, having had general anæsthetics previously, all concurred in preferring spinal anæsthesia. Dealing with the statistics upon the subject Mr. Dean said that Dr. Gorton Thomas had collected over 5500 cases. Tuffier in Paris had used stovaine in 520 cases and with the exception of three cases in which it was necessary to repeat the dose had never failed to produce anæsthesia. Kummell reported 186 cases, in one-sixth of which he had failed to produce anæsthesia. The patients ranged from five to 80 years of age, 20 per cent. of cases showed some nausea during operation, and about 25 per cent. had headache after. Freund reported 209 cases, 87 per cent. good and 13 per cent. poor. Three-fourths of his cases were laparotomies. Deitz reported 360 cases treated with Billon's stovaine; there were 50 appendix operations, 11 gastro-enterostomies, one gastrectomy, one operation on the pancreas, and about 40 hernias. There were no deaths. Döderlin had 44 cases up to Jan. 1st, 1907, without a death. There was one failure to produce anæsthesia; some nausea during operation and post-operative headache in eight or nine cases; and in two cases there was slight muscular paralysis of the arm and neck lasting ten days. In Kroenig's clinique out of a series of 400 major gynæcological and abdominal operations a general anæsthetic was only given 35 times either at the request of the patient or the medical attendant. They used novocaine, alypin, tropacocaine, and stovaine and preferred the last. Tillmann had had perfect anæsthesia and no bad effects during or after operation. In a series of 500 laparotomies Kroenig had not encountered any complications of importance. Heineke and Lanekuren, after analysing 70 cases of novocaine and stovaine, came to the conclusion that after effects with novocaine were two and a half times more frequent than with stovaine. Mr. Dean himself had noticed less headache in recent cases in which he had used stovaine of a lower specific gravity than previously. He deliberately thought it was a very valuable method which would probably oust general anæsthetics in about five years.

Mr. A. L. FLEMMING asked whether Mr. Dean had used lumbar anæsthesia in Trendelenburg's position and what specific gravity he had employed; was it as low as 1·013?

Mr. H. W. ARMIT was interested to hear of Mr. Dean's success with stovaine. Some competent observers had reported failures, vomiting in 60 per cent., and headache in 90 per cent. of cases. Mr. Armit then considered the various spinal anæsthetics from the pharmacological standpoint. Comparing their chemical constitution with their toxicity he found that cocaine contained two benzene rings, isopropionic acid, and several amino groups. Alypin only contained one benzene ring but was closely allied to cocaine in other ways and was found to be too toxic. Stovaine appeared to have advantages theoretically over the other two compounds and better clinical results bore out this consideration. Novocaine should be less toxic still but it appeared to be also less anæsthetic. Tropacaine theoretically should be the best of the series and Bier's and other German workers' experience confirmed this. Mr. Armit could not accept Kroenig's contention that varying the specific gravity determined at will the height of the anæsthesia.

Mr. L. H. MCGAVIN thought the method should be placed entirely in the hands of anæsthetists. He agreed with Mr. Dean that it would become the method of the future. There was no question that it did abolish shock. He had had no failures since he had given a second dose where one did not succeed. Mr. McGavin rather thought it caused tympanites. One of his patients vomited on the table. Most patients who had had chloroform previously preferred stovaine.

Dr. DUDLEY W. BUXTON said no doubt it would be adopted by all careful anæsthetists, but he thought it was questionable how far it was safer than a general anæsthetic. Most of the cases which he had seen had no shock or vomiting, but he had seen extreme shock, extreme faintness, and extreme respiratory shock. The personal factor must be taken into account. Some people were very frightened of a general anæsthetic, others were more affected by being conscious during an operation. He was of opinion that the after-effects of general anæsthetics had been exaggerated. But he thought that they must make up their minds that a new method of great value when properly mastered and applied to suitable cases had come amongst them, and he would be very glad to add it to his armamentarium.

Mr. V. WARREN LOW had used Mr. Barker's solution heavier than cerebro-spinal fluid. He had had one or two failures. A patient of his much preferred spinal anæsthesia while a friend who had had an operation under a spinal anæsthetic would have a general anæsthetic another time as he suffered from general muscular pains. He thought that vomiting was less frequent than after general anæsthesia.

Mr. F. R. HUMPHREYS asked Mr. Dean whether he had had any complications, because in foreign literature he had found mention of eight cases of diplopia, two cases of death (only one could be fairly attributed to stovaine), six cases of respiratory paralysis, and a large number of cases of vomiting, headache, and pain in the back. In Vienna they seemed to think that tropacocaine was the drug of the future.

Dr. G. H. COLT said that the chief difficulty was to find the way into the spinal canal. They must find the right angle and go straight in. In general practice a man could do much single-handed with this method.

Mrs. F. M. DICKINSON BERRY was surprised that so many of Mr. Dean's cases were of advanced age, as German authorities said it was contra-indicated in very old or young subjects.

Dr. J. BLUMFELD, speaking as one who intended to learn the method, inquired whether sitting up or lying on the side was the best position of the patient when the puncture was made.

Mr. DEAN, in reply, said that he had not used the method in Trendelenburg's position, but Kroenig said that an angle of 30 degrees was safe. He had had no cases of vomiting. He believed that no failures would occur if a second dose (half the first) were given when one dose did not succeed. He had seen anæsthesia extend as high as the clavicle without respiratory paralysis. He preferred to have the patient sitting up when he made the puncture. He saw no reason to withhold it from old or young.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

The Relation of Entozoa to the Mucous Lining of the Alimentary Canal.—The Rôle of Filaria in the Production of Disease.

A MEETING of this society was held on March 20th, Sir PATRICK MANSON, the President, being in the chair.

Mr. A. E. SHIPLEY (Cambridge) read a paper on the Relation of Entozoa to the Mucous Lining of the Alimentary Canal. In his communication, which was illustrated by a large number of excellent epidiascope slides, Mr. Shipley traced the various entozoal infections of the lower animals and man and demonstrated the injuries and septic consequences which might result from the presence of parasites in the alimentary canal. After describing various intestinal parasites of the grouse, the common fowl, and the horse, he reviewed the state of our knowledge as to the influence of entozoa in originating disease in man and suggested that appendicitis might be caused by trichocephalus trichiurus.—Dr C. W. DANIELS stated that he did not agree as to the connexion of trichocephalus and appendicitis; he thought he was supported in this by the fact that though natives of the tropics were deeply infested by that parasite appendicitis was very rare.—Sir R. HAVELOCK CHARLES said that his experience was that appendicitis was not uncommon in natives of Lower Bengal.—After remarks by Dr. L. W. SAMBON and Dr. R. T. LEIPER, both of whom agreed that trichocephalus had no influence in originating appendicitis, the PRESIDENT said that it was generally believed by medical men, and statistics fully supported the belief, that trichocephalus and appendicitis had no definite connexion.

Dr. W. T. PROUT read a paper on the Rôle of Filaria in the Production of Disease. He said that the adult filaria loa was a worm the habitat of which appeared to be the connective tissue and which became visible when it approached the surface in any situation where the tissues were thin and lax, as, for example, in the scrotum. Evidence was accumulating that a micro-filaria showing a certain amount of diurnal periodicity was the embryonic form of that worm and he described a recent case which illustrated that point and two other cases where the presence of the worm was associated with certain cutaneous phenomena. He thought that there were a sufficient number of recorded cases to justify him in associating the presence of filaria loa with Calabar swellings, but he attributed the local phenomena to the mechanical irritation of the adult worm as it forced its way through the connective tissue near the surface. The œdema which resulted was intensified by the rubbing and scratching which took place as a consequence of the itching, and the intensity of the phenomena depended to a large extent upon the sensitiveness of the individual's skin. Filaria nocturna was associated with a long list of diseases, which included lymphangitis, abscess, varicose glands, lymphatic varix, lymph scrotum, elephantiasis, &c., in other words with a series of diseases connected with inflammation or obstruction of some part or other of the lymphatic system. For the sake of argument, he assumed that elephantiasis was not due to filaria nocturna and criticised the various suggestions that had been put forward to see whether there was not another explanation which would account for the production of that and other so-called filarial diseases. The invariable association of filaria nocturna with elephantiasis had not been clearly proved. The production of the disease experimentally and the recognition of the parasite afterwards had still to be shown. Radcliffe Crocker, in discussing the pathology of elephantiasis, both sporadic and endemic, had said: "The disease is consequent upon an occlusion of the lymphatic channels of the part affected, independent of the cause and nature of the obstruction, and whether it is at the trunk or periphery of the lymphatic circulation." Dr. Prout described a case where obstruction in a main trunk caused extensive elephantiasis, and no doubt similar cases might occasionally be found in the tropics. But he was inclined to believe that the vast majority of cases of elephantiasis in the tropics was of peripheral origin due to a lymphangitis arising peripherally, caused by the introduction of a specific micro-organism, and resulting in the gradual narrowing and obstruction of the peripheral lymph vessels. Radcliffe Crocker had pointed out that in a temperate climate erysipelas, either as a severe or diffuse cellulitis or from repeated attacks, was one of the most common causes of lymphatic obstruction. He ventured to suggest that during the attacks of elephantoid fever an attempt should be made to examine the serum, and he looked forward to the time when some skilled observer would demonstrate the presence of some specific organism.—The PRESIDENT said that discussion on Dr. Prout's very valuable paper, with the reading of his other communications, would be deferred till the next meeting.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

Scientific versus Surgical Bacteriology.—Exhibition of Cases and Specimens.

A MEETING of this society was held on March 20th, Dr. J. ALLAN, the President, being in the chair.

Dr. A. S. F. GRÜNBAUM read a paper entitled "Scientific *versus* Surgical Bacteriology," to show the baselessness for the custom in some hospitals of excluding dressers from the educational advantages of the post-mortem room or dissecting room students and others from surgical wards. He invited concurrence with the following propositions: there was no evidence to show that the atmosphere or surroundings of the dissecting-room or post-mortem room were bacteriologically more dangerous than of the operating theatre or surgical wards; there was no evidence to show that the hands of students working in these rooms were bacteriologically more dangerous or difficult to disinfect than of those who were not so working; there was

no reason for supposing the student to become suddenly susceptible to the precepts of surgical cleanliness by mere removal from the dissecting-room; and this surgical superstition was detrimental to the education of the student, both before and after qualification, and was further to the disadvantage of the patient both of the present and the future and reduced the surgeon's education towards the mechanic's grade. He hoped that those responsible for the surgical teaching of medical students and for the progress of their own surgical attainments would consider the matter in the light of common-sense rather than of sentiment. He made no attack on the methods of chemical surgical asepsis; he merely asked surgeons to have faith in the efficacy of their methods.—Mr. H. LITTLEWOOD said he felt inclined to agree with Dr. Grünbaum and welcomed his suggestions—Mr. R. LAWFORD KNAGGS, Mr. J. F. DOBSON, Mr. H. COLLINSON, Mr. H. DE C. WOODCOCK, and Dr. A. BRONNER also discussed the paper.—Dr. GRÜNBAUM replied.

Dr. L. A. ROWDEN showed a series of lantern slides illustrating the Diagnostic Uses of the X Rays.

Dr. A. L. WHITEHEAD showed Leber's apparatus for Transillumination of the Eyeball. The presence and extent of an intra-ocular sarcoma causing detachment of the retina without symptoms were demonstrated. A case of glaucoma with secondary cataract preventing an examination of the fundus was also shown. The absence of any growth within the eyeball was demonstrated, indicating that the glaucoma was of the simple primary form and not secondary to an intra-ocular tumour.

The PRESIDENT showed a specimen of about 1½ inches of Bone excised from the middle of the left clavicle five months after fracture to relieve pressure on the brachial plexus. The operation was successful.

Mr. DOBSON showed: 1. A patient from whom a Popliteal Aneurysm had been excised, together with the specimen. The popliteal vein was so firmly adherent to the sac of the aneurysm that it was necessary to divide it. The patient recovered without any embarrassment of the circulation. 2. A case in which Perforation of a Tuberculous Ulcer of the Ileum occurred with diffuse peritonitis and extensive disease of the mesenteric glands and adhesions of coils of intestine. The perforation was closed by suture, recovery ensuing.

Dr. J. STEWART showed a specimen containing 13 distinct Fibroids massed together which was removed from a patient, aged 45 years. She had retention of urine for ten days and obstruction of the bowels, vomiting, constipation, &c. Albumin was present in the urine. There was a mass impacted in the pelvis dissecting up the left broad ligament and firmly attached to the rectum. The patient made an uninterrupted recovery.

Mr. LITTLEWOOD showed a Kidney with Malignant Disease from a child nine months old.

Dr. W. H. MAXWELL TELLING showed a specimen of Dissecting Aneurysm of the Arch of the Aorta, causing death by rupture into the pericardium. There was a tear an inch long due to atheroma at the junction of the transverse and ascending portions of the arch. The aneurysm extended to the commencement of the thoracic aorta and four or five inches up the neck.

Mr. WOODCOCK showed a case of Myxo-sarcomata apparently primary in the breast. The interest in the case was in the very wide distribution of secondary subcutaneous nodules—present everywhere except in the limbs.

Cases and specimens were also shown by Dr. BRONNER, Dr. T. WARDROP GRIFFITH, Mr. LAWFORD KNAGGS, and Mr. B. G. A. MOYNIHAN.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Etiology of Plague in India.

A MEETING of this society was held on March 18th, Dr. JAMES RITCHIE, the President, being in the chair.

Lieutenant-Colonel W. B. BANNERMAN, director of the Bombay Bacteriological Laboratory, gave an account of "Recent Researches into the Etiology of Plague in India, with an account of the work of the recent Plague Commission appointed by the Government of India, whereby it is shown that the *rat flea is the cause of plague epidemics in that country*." After enumerating the *personnel* of the Commission he stated that Dr. C. J. Martin, director of the Lister Institute, satisfied himself that at Bombay only could the work of investigation be properly carried out. The present outbreak of plague in India commenced in the autumn of 1896. It was known that in the remote valleys of the Himalayas the disease was often present in sporadic form but it was regarded as an antiquarian curiosity and as one banished from the civilised country of Hindustan. A warning had been issued to the Government medical officers in the Madras Presidency to be on the outlook for plague as it had broken out in epidemic form in 1894 in China. Within a fortnight of the outbreak of the disease in India Mr. Haffkine was sent from Calcutta to Bombay and a committee of local medical men was convened to consider what should be done. It was soon seen that two types of the disease occurred—viz., the pneumonic, which was very contagious, and the bubonic and septicæmic, which was not communicated from one person to another. The hospital attendants or friends of the patients did not contract the disease unless a pneumonic case had occurred in the wards. Major Thomson even went the length of stating that one of the safest places during an epidemic of plague was the ward of a sanitary plague hospital, something more than mere contagion being necessary to develop the disease. The seasonal prevalence of the disease at different times soon became manifest. Thus the epidemic was present in Bombay during the early months of the year, while at Poona, only 80 miles distant, it was only prevalent during the autumn. As years passed it became noticeable that huts or houses became infected with plague and remained so even after the inhabitants had fled. Such rooms were found or suspected to be most dangerous at night. Cases of infection in health camps were traced to surreptitious visits paid to infected villages during the night; also after heavy rain which drove the people from the flimsy huts to their former abodes there were frequently outbursts of plague. Even empty houses became infective during the absence of their owners. The whole evidence went to prove that man-to-man infection was not the cause of the spread of plague. Very soon after the outbreak of plague in India commenced overwhelming evidence showed that the disease was due to rats. It was early noticed that houses in close proximity became infective, though their inhabitants, owing to caste or other prejudice, had no connexion with one another. In some of these cases rat-holes were found to communicate with different houses, or the house rats of India had easy access to dwellings through the flimsy roofs The epizootic preceded the epidemic and dead rats were looked upon as precursors of plague. The rule was, "When dead rats were seen clear out or be inoculated." Was the rat wholly responsible however? It was a common belief in India that infected clothes might spread plague both to men and to rats. Thus isolated villages previously free from plague became the seat of it on the importation of infected clothing into them. In such cases the disease first appeared amongst the rats and later amongst the inhabitants. Human beings were the carriers of infection into new areas remote from the focus of disease, but within towns and villages the case was far otherwise, rats being the means of dissemination. In India, Simond of the Pasteur Institute was the first to suggest that the flea was the carrier of the disease and was able to infect a healthy rat from a diseased one though actual contact was carefully avoided. The first plague commission, however, concluded "that suctorial insects do not come under consideration in connexion with the spread of plague." Captain W. Glen Liston, I.M.S., however, worked at this theory and by the time that the second plague commission arrived had been able to place the despised hypothesis in a new light. Two species of rats were found in Bombay: 1. Mus rattus, which was so tame that it has a place in India corresponding to the domestic cat of this country, living in every room and breeding in drawers or cupboards. 200 of these might be found dead in a single house. 2. Mus decumanus. This was not, strictly speaking, a house rat but burrowed in the ground and was found in thousands in the empty rain water drains and sewers. The latter variety was attacked at an earlier period and was more severely affected by plague than was the former. Infection to the human being was much more frequent from the mus rattus. Captain Liston found that the fleas of rats belonged to a different species from those of man. The common rat flea was the pulex cheopis and in the absence of rats this flea took to other animals and even to man. In March, 1903, the guinea-pigs in the Zoological Gardens in Bombay were attacked by plague and the animals sick or dead from the disease were found to be infested with fleas,

though, as a rule, none were found on them in health. Dead rats had been picked up near the cages and their fleas, having no hosts, took refuge in the hair of the guinea-pigs. After this discovery guinea-pigs were employed to trap rat fleas in plague-infected places. The stomachs of these fleas were found to contain many actively living plague organisms. Captain Liston found by actual observation that pulex cheopis would attack man when its natural host was absent. The fleas collected from individuals suffering from plague were in many cases those peculiar to the rat. Lieutenant-Colonel Bannerman and Captain Liston built a set of experimental go-downs or cabins in which to carry on a series of experiments as nearly approaching those found in the native town as possible. As regards the conveyance of plague infection through food soiled with the excreta of rats Lieutenant-Colonel Bannerman narrated the experiments carried out by the Plague Commission. Of 6000 rats naturally infected with plague the primary bubo was situated on the neck in 74 per cent. and in the inguinal region in 25 per cent.; in no single case were mesenteric buboes present. On the contrary, in the case of 155 rats infected by feeding the mesenteric glands were affected in 70 per cent., the neck glands in 35 per cent., and the inguinal glands in a single case. Numerous experiments were made by feeding rats with the urine of patients dead from plague and in no case did the disease develop in them. Many rats were inoculated with the fæces of rats dead from the plague and only 2·9 per cent. died from the disease. Guinea-pigs also fed on infected food and kept under most insanitary surroundings never developed plague. It might confidently be stated that in India at least food contaminated with plague material had nothing whatever to do with the spread of the disease. On the contrary, Simpson was able to infect all the domestic animals of China (with the exception of the dog) by feeding them on huge quantities of plague-infected viscera and it would appear as if there were some curious difference in plague in India and in China. It had been a favourite theory that plague was spread through contamination of the soil. The natives went barefoot and often ate their food from leaves placed on the floor and therefore liable to contamination. Many investigators had, however, constantly failed to find the presence of bacilli in the soil and experiments made recently showed that plague bacilli rapidly perished in the presence of saprophytic organisms in the soil and disappeared after four days. After detailing the experiments carried out by the Commission, which showed that only a very small proportion of animals exposed to infection contracted the disease and then only when the floors had actual pools of infected liquid on them, Lieutenant-Colonel Bannerman showed that animals might contract plague when carefully protected from contact with the soil and that just as many guinea-pigs contracted plague in disinfected rooms in Bombay as in rooms not so treated. The latter infection was due to the presence of rat fleas which were not affected by the (1 in 750) solution of perchloride of mercury. Lieutenant-Colonel Bannerman then dwelt on the distinguishing features of the rat flea and narrated experiments to prove that fleas from infected rats conveyed the disease to healthy animals. In 11 out of 16 such experiments (= 69 per cent.) the healthy white rat from England contracted the disease in this way, while with Bombay rats the percentage was 38 per cent. The smaller percentage was probably due to a certain number of the latter rats being immune to the disease. Many hundreds of successful flea-transmission experiments were also carried out with guinea-pigs. To prove that mere proximity to diseased animals was incapable of transmitting the disease 50 healthy flea-free guinea-pigs were placed in a flea-proof go-down along with ten guinea-pigs inoculated with a virulent culture of plague bacilli and fed with contaminated food; nine of the infected animals died and yet none of the healthy guinea-pigs contracted plague. In a flea-proof go-down 49 guinea-pigs had been living in health for three weeks when 221 fleas taken from the bodies of guinea-pigs dead from plague were introduced, and after six weeks' interval the whole of the guinea-pigs had succumbed to plague. A flea could jump barely six inches, so in a flea-infested go-down the guinea-pigs were divided into three groups of four each, one allowed to run on the floor, one confined in cages two inches above the floor, and the third group in cages two feet from the floor. Two days afterwards 125 fleas were taken from those on the floor, 27 from those in the low cages, and none from those in the high cages. All the animals in the first two groups died but none in the third group. The same results were obtained when monkeys were employed. The season in which epizootics were readily produced experimentally and spread rapidly corresponded with that of the plague epidemic. Experiments were made to prove that plague-infected houses were dangerous because of the fleas which they contained. The first fact discovered was that nearly all the fleas caught on guinea-pigs which had been allowed to run about these infected houses were rat fleas and were present in large numbers. The second fact was that a large number of such guinea-pigs died from plague; of 189 houses experimented on in Bombay and in the Punjab 40, or 21 per cent., proved infective to guinea-pigs. Even after disinfection of plague houses by thorough washing with perchloride of mercury solution (1 in 750) and disinfection with the fumes of sulphur which were sufficient to destroy the plague bacilli, it was found that guinea-pigs became infected in nine out of 31 such houses, or in a proportion of 29 per cent. This was exactly the same percentage that proved infective out of 42 other rooms experimented with in the same season and which had not been disinfected in any way. The average number of fleas caught in these disinfected rooms was 40 and in one instance as many as 263 were present; the average in 13 rooms not disinfected was 34. The great majority of fleas caught on the guinea-pigs placed in the plague-infected houses were rat fleas. In another series of experiments in plague-infected rooms it was shown that animals contracted the disease although protected from floor infection and from all contact with plague-infected rats, provided that they were not likewise protected from fleas. For this purpose pairs of animals were placed in the rooms in cages so contrived that one was flea-proof, while the other was open to the entry of these insects. In 63 experiments all the protected animals remained healthy, while eight, or 13 per cent., of the unprotected ones developed plague. A variation of this experiment was made by protecting the animal in the cage, not by gauze but by sticky fly-paper, on which the fleas were caught in trying to reach their victim. In 59 such experiments all the animals so protected remained healthy, while 9 per cent. of those not so protected developed plague. In the case of these caged animals the average number of fleas per guinea-pig was 3, as contrasted with 20 to 40 in those allowed to run over the rooms freely. Of 401 fleas caught on the fly-paper, 221 (= 55 per cent.) were rat fleas; 148, or 37 per cent., were human fleas; and 32, or 8 per cent., were cat fleas. A greater number of rat fleas were found in plague-infected houses than in healthy dwellings. The logical conclusion would appear to be that rooms were dangerous because of the infected rat fleas in them and that the soil and air had no infective properties. It remained to prove that the rat flea was the cause of the transmission of plague from rat to man. It had to be remembered that the germs of plague gained access to the body through the skin; pneumonic plague might be ignored, as it occurred in only about 2·5 per cent. of all cases. As regards the site of the buboes, in practically every case the primary bubo developed in the group of glands which stood in direct lymphatic connexion with the area of skin which had been inoculated. All evidence went to negative the idea that plague was ever naturally conveyed through the digestive tract but that it indicated the skin as the real point of entry. A definite time relationship was seen between the Rattus epizootic and the epidemic—the mean interval varied from 10 to 14 days. Captain Liston showed that rat fleas attacked man and other animals in the absence of their natural hosts. When a man placed his hand into a cage containing rat fleas they jumped on to the skin and in time would bite; unless very numerous, however, they would not do so in the presence of rats. When starved for 72 to 96 hours they readily fed on man. The members of the Plague Commission always wore top boots on visiting plague houses and the bare-legged attendants were only saved from infection by regular injections of Haffkine's anti-plague vaccine. The stomach of a flea was large enough to contain many plague bacilli and these germs multiplied in its stomach. The bacilli were passed in abundance per anum while the insect was sucking blood on the skin. Such fæces were infective through the pricker wound even without rubbing. The duration of infectivity of fleas had been estimated as 15 days during the epidemic season and seven days in the off season. A flea might survive for three weeks and thus there was ample time for it to be transported in clothing from place to place with passengers and

it might infect rats in the new locality. The general conclusions were: (1) pneumonic plague was highly contagious, but being rare (less than 3 per cent. of all cases) played a very small part in the spread of the disease; (2) bubonic plague in man was not infectious and was entirely dependent on the disease in the rat; (3) the infection was conveyed from rat to rat and from rat to man solely by means of the rat flea; (4) a large majority of cases of plague occurred singly in houses, but where more than one case occurred in a room the attacks were usually nearly simultaneous; and (5) plague was usually conveyed from place to place by rat fleas brought by people in their baggage or on their persons.

Sir THOMAS R. FRASER desired to convey thanks to the whole of the Indian Medical Service for the good work which they had done and were doing. The duty of the first plague commission was to focus the then existing knowledge, but it did not embark on any scientific work. He alluded to the grossly insanitary conditions of the native houses which favoured the multiplication of rats and consequently of their parasites. He thought it would be well-nigh impossible to exterminate either rats or their fleas in India. Sir Thomas Fraser alluded to the marked immunity to the disease enjoyed by Europeans and stated that this was due to their better houses; even when attacked their mortality was only 22, as contrasted with from 90 to 98 per cent. of the natives. In the Glasgow epidemic of 1900 the disease was confined to the slums and rats were abundantly affected. The case mortality in Glasgow was about the same as it was in Europeans in India. The rat epidemic persisted for 18 months after the last case of plague in a human being had occurred in Glasgow.

Sir ALEXANDER RUSSELL SIMPSON and Dr. ALLAN JAMIESON took part in the discussion and Lieutenant-Colonel BANNERMAN replied.

Major D. G. MARSHALL, I.M.S. (retired), and Dr. G. LOVELL GULLAND described a case of Kala-Azar which had recently proved fatal in Edinburgh.

EDINBURGH OBSTETRICAL SOCIETY.

Transmission from the Mother to the Fœtus.—Frozen Sections.—The Operative Treatment of Displacements.

A MEETING of this society was held on March 11th, Professor W. STEPHENSON (Aberdeen), the President, being in the chair.

Dr. JAMES LOCHEAD read a paper on the Transmission of Nitrogenous Compounds from the Mother to the Fœtus. He said that experimental results showed an absence of altered proteins such as albumoses and peptone in the freshly obtained placenta of the sheep and an absence of any extracellular proteolytic ferment. Hence the placental action was not, as had been stated, analogous to that of the intestine. By the precipitin test egg albumin was shown to pass from the mother to the fœtus unchanged while ox serum did not. It was probable that the normal serum proteins also did not pass across the placenta as through a sieve but were transformed there and elaborated into products necessary for the growth of the fœtal tissues.

Dr. A. H. FREELAND BARBOUR read a paper on the Frozen Sections by Bumm and Blumreich and by Zangemeister, bearing on the question of the existence of a lower uterine segment. After a historical survey of the work done by means of frozen sections on the lower uterine segment during the last 30 years, Dr. Barbour proceeded to criticise the position taken up by Bumm and Blumreich as a result of their examination of frozen sections of the body of a primipara, aged 39 years, who died during the second stage of labour. Their views were that the so-called lower uterine segment was really formed by the stretched cervix and that the retraction ring was formed at the os internum, this being confirmed by microscopic examination. They therefore concluded that Barbour was wrong in the interpretation of his section published in 1890, that what he called stretched uterine wall was really stretched cervix, and that the membranes over this area, described as partly adhering and partly detached, were artificially adherent as the result of the freezing. In controverting this, Dr. Barbour pointed out that in Bumm and Blumreich's section the cervix posteriorly was 3·7 inches in length, as against 1·3 inches in his own, and that there was a corresponding difference in the thickness from 1 to 2 millimetres as against 4½ millimetres. He exhibited micro-photographs from his own case showing quite clearly that the decidua and chorion were actually growing on the area between the retraction ring and the upper limit of the cervix as determined by the presence of typical cervical glands in the area in question. He attributed the differences in the two sections to the different ages of the patients and to probable differences in the amount of opening up of the cervix before labour began. Finally, he defined the lower uterine segment as "that part of the uterus which must be converted into a canal so as to allow the fœtus to pass." This corresponded to rather less than a fourth of the total cavity of the uterus. This part of the uterus might by pressure of its contents have its muscular bundles opened up so that it contracted less efficiently when labour set in. Whether the retraction ring formed at the os internum, as it did in some cases, or higher up would depend on the contractile efficiency of the musculature. The section by Zangemeister was from a case of rupture of the uterus. As the sections were coronal the peritoneal relations were well seen, the greater part of the rupture being lateral and extra-peritoneal; the peritoneum was torn through only for a small area posteriorly.

Dr. W. E. FOTHERGILL (Manchester) read a paper on the Operative Treatment of Downward and Backward Displacements. The pelvic viscera, he considered, were mainly supported by the denser portions of the parametric, paravaginal, and paravesical connective tissue; in other words, by the sheath of the blood-vessels and the lymphatics of the uterus, vagina, and bladder. The one constant and essential factor in the causation of prolapse was relaxation and elongation of these perivascular sheaths. Insufficiency of the pelvic diaphragm and perineum, increased intra-abdominal pressure, and increased weight of the uterus were mere separable accidents which did not occur in all cases of prolapse. Relaxation of the whole lateral mass of perivascular tissue caused classical prolapse, but relaxation of the lower portion alone produced cystocele and vaginal prolapse, while relaxation of the parametrium alone permitted the occurrence of pure retroversion. The ideal surgical treatment of prolapse would be shortening of the whole lateral mass of perivascular tissue, but the best that could actually be done in this direction was the performance of anterior colporrhaphy in such a manner as to bring together in the middle line behind the bladder and in front of the cervix and vagina the tissues which previously lay at the sides of the cervix and vagina. As a uterus which had once been loosened would always be loose, this measure should be supplemented by posterior colporrhaphy and perineorrhaphy. In the worst cases ventro-fixation should also be done in such a manner as to secure firm union between the anterior surface of the uterus and the posterior surface of the recti. Peritoneal adhesions were inefficient for this purpose, as were all operations depending upon the use of the round ligaments. These operations, however, were suitable for those cases of retroversion, uncomplicated by prolapse, in which operative treatment was required.—Sir J. HALLIDAY CROOM, Sir A. R. SIMPSON, Dr. R. P. RANKEN LYLE, and Dr. BARBOUR took part in the discussion.

SOUTH-WEST LONDON MEDICAL SOCIETY.—A meeting of this society was held at Bolingbroke Hospital on March 11th, Dr. A. Dumville Roe, the President, being in the chair.—Dr. T. N. Kelynack read a paper on Recent Researches Regarding the Pathology of Alcoholism. Alcoholism, he said, was a many-sided medico-sociological problem into which investigation was being made in many varied methods but only strictly logical and scientific methods were of any value. Dealing with the evolution of the alcoholic, he mentioned the view of Dr. G. Archdall Reid that the human desire for stimulant is innate; the theory of the presence of "hormones" in the blood; that natural selection tends to the elimination of the alcoholic. The rôle of heredity in the causation of alcoholism was discussed, it being held that it was indisputably established that the offspring of the alcoholic were lacking in the elements which make for sound mental balance and vigorous bodily life, and Dr. F. W. Mott's conclusions on the interdependence of alcohol and insanity being quoted. The effect of environment was next considered and Dr. Kelynack briefly reviewed the laboratory work of Kraepelin, Mott, and others, offering some suggestive lines on which family practitioners might investigate the causes which conduce to alcoholism and the relationships between it and other diseases. The chief measure of prevention lay in the education of the child and next in importance was an

increased power of dealing with the confirmed inebriate. —After some remarks by the President, Mr. Mark Robinson gave details of experimental work tending to show the destructive influence of small doses of alcohol on protoplasm and referred to the records of insurance companies as showing the vital as well as the economic value of abstinence. —Dr. M. G. Biggs spoke of the natural craving for stimulant and sedative as ineradicable and divided alcoholics etiologically into the two classes of "luxury" and "misery" drinkers. In his opinion it was impossible to prove that moderate doses did harm.—Dr. L. S. McManus gave instances to show that heredity was not a necessary factor, while Dr. S. R. Dyer held that among the criminal classes heredity was a distinct factor.—Dr. W. G. Dickinson said that in his experience a certain proportion of women alcoholics were curable.—Dr. D. M. Aitken found that among women alcoholics gynæcological cases were the most difficult to deal with.—Dr. V. Ryan gave an interesting description of his experience of the geographical distribution of alcoholism, instancing extraordinary methods of obtaining alcoholic stimulation which he had seen in Manchuria and South Africa.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 6th, Mr. Richard Lake, the President, being in the chair.—Dr. Andrew Wylie read a paper on Foul Breath, its Causes, Pathology, and Treatment. He said that fœtor of the breath was purely subjective, entirely objective, or both. There were several different kinds of fœtor, such as the putrefactive, the sulphuretted hydrogen, the garlic, the sweetish, and the toxic types. Fœtor was classified according to the different regions responsible for its source, as diseases of the nose and accessory sinuses, nasal obstruction and growths, and naso-pharyngeal diseases, imperfect deglutination and carelessness in oral and dental hygiene, affections of the tongue and gums, caries of the teeth and imperfect dentures, diseases of the follicles of the tonsils, tuberculous, syphilitic, and malignant diseases of any part of the nose, pharynx, and larynx, if cartilage or bone was involved; suppuration of the middle ear, bronchiectasis and abscess of the lung, foreign bodies in any part of the upper air passages, gastro-intestinal diseases, and in paralytic patients. Fœtid breath was found more or less in spirit and beer drinkers, in smokers, in those who take certain drugs, and in those who follow certain occupations. Bacteria were the cause of the trouble and the treatment was to find the cause and to remove it, or at least to reduce the activity of the bacteria.—Mr. W. H. Bowen read a paper on Pneumococcal Otitis Media. He stated his opinion that the pneumococcus was the organism usually causing otitis media at any age. The occurrence of otitis during epidemic diseases was not considered. Special attention was called to the onset of otitis media after operation on the nose and naso-pharynx and the etiology was carefully considered. The sponging over the face with cold water was strongly condemned and the importance of avoiding draughts and keeping the patient warm was emphasised. The otorrhœa of babies up to 18 months was considered and the comforter was looked upon as the strong etiological factor, so much so that Mr. Bowen labelled it "comforter otitis media." It was pneumococcal and should be treated by cleansing the mouth in addition to local treatment to the ear. The paper finished with a consideration of the signs and symptoms of acute infection of the mastoid antrum and cells, which was practically always due to the pneumococcus.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 13th, Dr. J. Walker Downie, the President, being in the chair.—Dr. C. O. Hawthorne gave an address on the Cerebral and Ocular Complications of Anæmia and the Probable Relationship of these to Thrombosis. He referred to the occasional cases of chlorosis, in which such symptoms as stupor, coma, convulsions, various paralyses, and double optic neuritis appeared more or less suddenly, and he related some case records where evidences of cerebral disturbance were limited to double optic neuritis and ocular paralysis. As in a certain number of the more severe cases necropsy had proved the intracranial lesion to be thrombosis of the cerebral veins and sinuses, it was at least probable that the same condition was the cause of optic neuritis and ocular paralyses when these appeared as the sole unusual events in connexion with chlorosis. The position was made still stronger by the fact that between the two groups above defined there were cases showing intermediate degrees of cerebral disturbance. Hence a graded series of cases might be traced from those leading to a fatal issue down to such relatively slight events as optic neuritis and ocular paralysis. From this position it seemed safe to claim that the optic neuritis which, without other complications, was at times found in chlorotic women (and the same might be said of an ocular paralysis) was probably dependent on thrombosis in the intracranial veins or sinuses. Further support for such a suggestion might be found in the occasional occurrence of optic neuritis in acute anæmia and in suppurative diseases of the middle ear, in both of which conditions sinus thrombosis was a distinct possibility. Another complication sometimes seen in chlorosis was contraction of the visual fields which might assume characters that demanded the diagnosis of an intracranial lesion and this might quite well be a thrombosis. Other examples of the range of thrombosis in anæmia might be seen in the occasional occurrence of retinal embolism and in some cases of retro-bulbar neuritis.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on March 20th, Dr. W. Langdon Brown, the President, being in the chair.—Dr. Harold Pritchard read a paper on Specific Inoculations. He defined a vaccine as a standardised emulsion of dead microbes in saline solution and indicated the lines of treatment for obtaining beneficial results. Treatment was concerned with the process of increasing protecting substances in the blood. He discussed natural and artificial immunisation with special reference to the administration of small doses of specific vaccines when inoculation was used. He alluded to Sir Almroth Wright's views on sera and their manner of production and discussed the opsonic theory. He emphasised the importance of using vaccines obtained from cultures of the specific organism infecting the patient and indicated the methods of preparing the vaccine. Vaccines were most useful in chronic cases such as acne, old boils, carbuncles, &c., but were not of much use in acute cases.—Mr. H. W. Armit, of the Lister Institute, who took part in the discussion, said that Wright's opsonic index method was particularly unsatisfactory and that opsonins were not specific substances. He considered that the important substances were the antibodies of Ehrlich. Possibly the best description of antibodies as produced by foreign protein material is that by Nichol. In treating chronic cases with vaccines it was best to start with a very low dose and to go on up to a very high dose.—Mr. W. Girling Ball said that during a course of vaccine treatment the value of the opsonic index could be disregarded. He related his experience of treating chronic cases of staphylococcic infection, chiefly boils and acne. He also alluded to the importance for each patient to have a vaccine prepared from his own organism. He originally injected 500,000,000 organisms once a fortnight but he now used 60,000,000 every four or five days.

PATHOLOGICAL SOCIETY OF MANCHESTER.—A meeting of this society was held on March 11th, Dr. J. J. Cox being in the chair.—The meeting was devoted to a discussion on Rheumatoid Arthritis. In opening the discussion, Dr. Cox pointed out that rheumatoid arthritis prevailed in this country to a considerable extent. Since 1883 up to the end of 1907 close upon 13,600 cases of the disease had been admitted to the Devonshire Hospital, Buxton, a yearly average of 566. Rheumatoid arthritis was held to be a specific morbid entity, due most probably to the action of some as yet unknown micro-organism, an auto-intoxication affecting individuals from very early years, much more common in females than in males, running an acute, subacute, or more insidiously chronic course, leading to progressive and often symmetrical degeneration of the joints and periarticular tissues, accompanied by general debility and associated with evidences of disturbance of the nervous system. The tendency of the disease was to become progressively worse, leading to much crippling and incurable deformity of the involved joints. It might begin as an independent affection or might be grafted upon other arthropathies, such as rheumatic, influenzal, or other bacterial conditions. Any profound disturbance of the general health might lead to its development. The treatment was unsatisfactory because the true causation was unknown. Dr. Cox suggested the establishment at the Devonshire Hospital of a research scholarship, the holder of which might by close study of the pathology, especially of the bacteriology of the disease, discover some means of proper and satisfactory treatment. This would be of national importance. The following took part

in the discussion: Dr. Braithwaite, Dr. E. N. Cunliffe, Dr. F. Craven Moore, Dr. E. S. Reynolds, Professor J. Lorrain Smith, Dr. Thompson, and Dr. A. T. Wilkinson.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 18th, Dr. A. Fulton being in the chair.—Dr. A. C. Reid showed a man, aged 32 years, who had come under notice two years previously with a large Tumour occupying nearly the whole area of the upper half of the abdomen and with dyspeptic symptoms. No satisfactory diagnosis had as yet been arrived at.—Mr. W. M. Willis showed a woman, aged 61 years, with a large Cystic Swelling in one breast, first noticed eight or nine months ago.—Dr. F. H. Jacob opened a discussion on the Feeding of Infants. After tracing the digestive difficulties which might arise in breast-fed babies Dr. Jacob dealt with some of the problems which had to be met in artificial feeding. Vomiting often arose from the curd of cow's milk but might on the other hand be due to an excess of fat. Some children did not thrive until they were given mercury, and warmth was important for all. When cow's milk did not agree with a child it was an interesting problem as to what other food should be tried in its place. Another question open to discussion was how soon starchy food might be begun, and the same applied to eggs. The broad lines of diet in infantile diseases were also sketched.—The discussion was continued by Dr. Fulton, Dr. W. Tibbles, Dr. J. S. Bolton, Dr. J. H. Thompson, Dr. J. Watson, Mr. R. E. P. Squibbs, Mr. A. R. Tweedie, Dr. J. W. Scott, Mr. T. Geraty, Mr. C. J. S. Dismorr, Dr. W. C. C. Kirkwood, Dr. A. J. Sharp, and Dr. J. A. O. Briggs, and Dr. Jacob replied.

Reviews and Notices of Books

Pathology, General and Special, for Students of Medicine. By R. TANNER HEWLETT, M.D. Lond., F.R.C.P. Lond., D.P.H. R.C.P.S. Lond., Professor of General Pathology and Bacteriology in King's College, London; Lecturer on Bacteriology, London School of Tropical Medicine; Physician to the Seamen's Hospital, Greenwich; Examiner in Pathology, University of Aberdeen; Examiner in Tropical Medicine, University of London. Second edition. London: J. and A. Churchill. 1907. Pp. 585. Price 10*s.* 6*d.* net.

THE appearance of a second edition of Professor Hewlett's book on pathology within a year of the issue of the first shows that it has met with the recognition which it deserves. As a convenient short handbook of the subject it supplies a distinct want. A great deal of recent work is succinctly summarised and incorporated, and, as we pointed out in our review of the first edition, it is surprising how much information is included within so small compass and yet in a form easy to grasp. Professor Hewlett is especially to be commended for the clear way in which he discusses matters which are controversial and for the impartial manner in which he presents theories and criticises them.

In general outline the present edition conforms to that of the previous one but certain additions have been made, notably in the section dealing with heredity, in which some reference is made to the principles of Mendelism. The chapter on neoplasms has also been extended and forms a very clear summary of the general features of new growths. The discussion of the etiology of tumours is clear and affords a valuable *résumé* of the various views current on this subject. Arterio-sclerosis also is considered in greater detail in this edition and reference is made to recent work on the experimental production of arterio-sclerosis. Medial sclerosis of the Moenckeberg type is differentiated from atheroma which is defined as "a localised, patchy, fibro-plastic infiltration of the intima," and this in turn is separated from diffuse intimal sclerosis. Additions have also been made to the sections dealing with the degenerations and infiltrations and to those devoted to inflammation, the infections, and the heart. The chapter on the pathology of the female generative organs has been practically rewritten by Dr. Frank E. Taylor and contains short accounts of the various morbid conditions which are usually met with in those organs. A section is devoted to the toxæmia of pregnancy and this, though brief, is to the point.

The consideration of the special pathology of the various systems and organs is not as full as that of the principles of general pathology, although in most cases the accounts given are thoroughly practical and intelligible; in a few, however, there is little more than an enumeration of the various morbid conditions with brief explanatory notes, but in these, as a rule, the conditions have been described under the general description of the morbid processes.

We are of opinion that Professor Hewlett's book is a useful manual for those wishing to obtain a critical presentation of the state of our knowledge in regard to the pathology of disease in convenient form. The book is well produced and is illustrated by a number of reproductions of microphotographs principally of microscopical specimens.

The Technique of Vagino-peritoneal Operations. By Professor E. WERTHEIM and Dr. TH. MICHOLITSCH. Translated into English by CUTHBERT LOCKYER, M.D., B.S. Lond., M.R.C.P. Lond., F.R.C.S. Eng. With 138 illustrations. London: Macmillan and Co., Limited. 1907. Pp. 323. Price 25*s* net.

THERE can be no question that some of the most difficult operations in gynæcological surgery are those which are undertaken through the vagina. The difficulty of obtaining free access to the field of operation and the small space often in which the necessary manipulations have to be carried out may render these operations extremely difficult and tedious. This manual by Professor Wertheim and Dr. Th. Micholitsch is the only systematic work which has appeared on this subject and Dr. Cuthbert Lockyer has conferred a considerable benefit upon English gynæcologists by undertaking its translation. The book, we need hardly inform our readers, is an exceedingly good one and is well worthy of the very high reputation of its authors. The illustrations are admirable and the descriptions appended are concise, clear, and trustworthy. The figures are from photographs taken from the cadaver after splitting the symphysis pubis so as to render the field of operation readily accessible for photography. This must be remembered by the young surgeon who consults the book, since on looking at the pictures many of these operations appear to be very easy and to entail no great amount of manual dexterity; whereas on the living subject this is often far from being the case, and it is necessary, therefore, for the reader not to be misled by the clearness of the drawings. The manner in which the various operations have been shown on the cadaver is most ingenious and must have entailed a considerable amount of trouble.

The directions given as to the best manner of carrying out the different procedures are extremely good and the successive steps to each are described in detail. All the operations which can be carried out through the vagina and which involve opening the peritoneal cavity are discussed in turn and no one could help receiving much information and many useful hints from a study of this work. The main principles to be followed are clearly set out and we notice amongst others that the great advantage of always opening the anterior fornix of the vagina rather than the posterior is laid stress upon. There can be no doubt as to the truth of the authors' statement that in this way all the pelvic structures, even those lying behind the uterus, can be best reached and dealt with most readily.

With the reservation we have made—namely, that the reader must remember carefully that the symphysis pubis has been split and that the photographs have been made up, so to speak—this work should prove of the greatest assistance

to all operating gynæcologists. The translation has been well carried out and the German text has been followed scrupulously.

Diagnosis of Organic Nervous Diseases. By CHRISTIAN A. HERTER, M.D., Professor of Pharmacology and Therapeutics at Columbia University, &c. Revised and enlarged by L. PIERCE CLARK, M.D., Visiting Neurologist to the Randall's Island Hospitals and Schools, New York, &c. London and New York: G. P. Putnam's Sons. 1907. Pp. 690. Price 12*s.* 6*d.* net.

THOUGH called elementary in character this book affords a very complete account of the diagnosis of nervous diseases. It opens with a chapter on the structure and functions of the nervous system which are considered in sufficient detail for the needs of the practical physician. Then follows a chapter on the symptomatology of nervous diseases, phenomena such as paralysis, contracture, convulsions, incoördination, and so forth, being considered in turn. Chapter III. deals with localisation of the lesion and Chapter IV. with recognition of the nature of the trouble. Chapter V. describes the different clinical types of disease and Chapter VI. deals with the diagnosis of organic from functional disorders. The seventh chapter is devoted to a description of the methods to be adopted for the examination of the patient, a subject which we should have expected to occupy an earlier position, as it is the basis of much that has preceded; and in the eighth and last chapter some illustrative cases are recorded as examples of the different maladies.

Our general impression of the book is distinctly favourable; it appears to have well merited the dignity of a second edition. The contents are clearly and well expressed and the information for the most part is accurate and up to date. The diagrams employed are useful and well adapted to illustrate the points desired, though one or two of the more ambitious illustrations from photographs are very poorly reproduced. The book should be useful to both students and practitioners who desire special guidance in the field of nervous disease.

Mental and Sick Nursing. By ROBERT JONES, M.D. Lond., F.R.C.P. Lond., F.R.C.S. Eng. London: The Scientific Press, Limited. 1907. Pp. 222.

IN this text-book Dr. Robert Jones has attempted the difficult task of writing a manual which shall be of service both to medical men and to nurses working in asylums. To write both for the medical and for the lay reader usually results in the work being too simple for the one or too technical for the other, but in this instance Dr. Jones is to be congratulated on producing a volume which will appeal to both classes. The medical officer whose duty it is to lecture to the nursing staff will find many valuable hints and suggestions in this small work.

In the opening chapters the author briefly describes the various parts of the nervous system and the different organs of the body. He then passes on to discuss mind and its attributes which are also dealt with as briefly as possible. Chapter VIII. is a very instructive one and deals with instincts and habits. Passing on to the description of the various forms of insanity Dr. Jones refers to the different classifications of mental disorder but advises that the one based on the symptoms is the most practical one for the nurse.

The duties of the mental nurse are well described. We do not quite agree with the author when he recommends in certain cases "vigorous outdoor exercise" for the maniacal patient, for unless he means by this the chronic maniacal dement we feel that the day for such treatment is past, for the whole tendency of the present time is to give to all persons suffering from recent excitement prolonged rest, preferably out of doors.

The description of insomnia and its treatment is good and instructive. Perhaps the best part of the book is that devoted to the various methods of treatment, such as massage, electricity, baths, and physical exercises. The account of the daily routine of the nurse's duties in the asylum is also a useful one and has the advantage of being written by one who has had wide experience in asylum administration.

The book is simply written and avoids all controversial subjects which divide the various schools of psychiatry, and in this the author is wise, as it prevents unnecessary confusion in the nurse's mind. Blank pages are interleaved which the nurse will find useful for notes of any lectures which she may attend. There is an excellent introduction by Sir William J. Collins, M.P. Altogether this small manual may be safely recommended to all those whose duty it is to tend and to nurse the insane.

Practical Dairy Bacteriology. Prepared for the use of Students, Dairymen, and all interested in the Problems of the Relation of Milk to Public Health. By H. W. CONN, Ph.D., Professor of Biology of Wesleyan University and Bacteriologist to the State Board of Health of Connecticut. Illustrated. London: Kegan Paul, Trench, Trübner, and Co. 1907. Pp. 314. Price 6*s.* 6*d.*

THERE are few public health problems which are of greater interest than those connected with the milk-supply of a community and especially at the present time when various health authorities are seeking fresh powers for the control of farms and dairies and when the Government has promised to introduce a Bill for the better safeguarding of the milk of this country. A work dealing with some of these problems, written by an acknowledged authority, is therefore peculiarly welcome.

The book now reviewed is addressed to two classes of readers: to those interested in the problems arising in the dairy proper and to those interested in the problem of the relation of milk bacteria to the public health—that is, to the producer, distributer, and consumer of the milk. It is intended, on the one hand, to remove the lack of information of health officers as to the conditions and possibilities of the dairy and farm and, on the other hand, to remove the similar ignorance of the dairyman as to the necessities and demands of the public and thus to avoid the friction which is liable to arise between the producer and the inspector of the milk owing to a lack of comprehension of each other's difficulties. The author does not deal directly with administration but supplies information on which administrative action may be based. This is perhaps fortunate, for specific administrative regulations could hardly fail to be viewed from the standpoint of American conditions which differ widely from those of England.

When once the necessity of a pure and wholesome milk-supply is thoroughly realised, to satisfy these requirements is, as the author says, purely a matter of cost. It is here, however, that practical difficulties arise in avoiding on the one hand the ruin of the farmer and on the other such an increase in the cost of the purer milk that it may not be out of reach of the children of the poor. The improvement in the quality of the milk will of necessity be accompanied by some increase of the price. Already it is possible to get milk to which no exception can be taken but at a cost considerably greater than the average market price. There is no doubt, however, that much improvement might be effected without serious increase in the cost of production by the exercise of greater knowledge and intelligence on the part of the farmer and the dairyman and it is the aim of this book to supply the knowledge which would help to effect the desired improvement. One of the most interesting sections of the book deals with the value of the trained dairyman and it is shown that such a man will with the same apparatus and under the same conditions obtain milk containing only

one-fifth of the impurity found in that obtained by the untrained, but not unskilled, worker.

After a brief but accurate account of the morphology, classification, and vital conditions of bacteria there is a short account of the normal and abnormal types of bacteria found in milk, their sources, and the usual course of their multiplication. The next chapter on disease germs in milk is of more interest to medical readers and the subject is treated under the two heads of infections derived directly from the cow and indirectly from external sources. A clear account of the relation of the bacillus tuberculosis to the milk-supply is given and the author concludes with an unusually definite expression of opinion as to the futility of any system of inspection or analysis, whether chemical or bacteriological, to prevent danger arising from the tubercle bacillus. "Until a law requires the universal testing of all cattle (with tuberculin) and the immediate slaughter of all reacting animals any public dairy inspection will be futile in this respect." We should welcome more such definite expressions of the author's opinions; as a rule the subjects are treated with judicial impartiality and the reader is left to draw his own conclusions.

Dairy methods are next treated and the importance of grooming the cattle, moistening the udder when milking, and milking in a special room is insisted upon and graphic representations are given to show the improvement in the quality of the milk which follows on the adoption of these various precautions. In writing of the treatment of milk for the market the author appears to favour the pasteurisation of the supply and this is developed in the interesting section on Public Problems into the statement that "the sole practical method of assurance that the milk should contain no specific disease germs is by adopting pasteurisation or sterilisation." In this section also the author discusses the use of "standards of impurity" and dairy inspection, chiefly to show the difficulties which surround them, and finally, though with reluctance, adopts the idea of compulsory pasteurisation of the milk-supply. This idea has not been accepted with favour in England on the ground that it would lead to dirt and carelessness on the part of the farmer or the dairyman and would cause him to sink back into the slovenliness from which he has been slowly roused.

The transportation of milk is in England a thorny question but there is no doubt that the railway companies will have to provide facilities for cold storage during transit and the farmers will have to learn the necessity of immediately cooling their milk. "No dairy is properly equipped unless it has an ice-supply." It cannot be said of this country, as the author says of America, that "milk-handlers have learned to use ice freely." The next portion of the book is of more especial interest to the dairyman and is concerned with butter-making and cheese ripening. Finally, in the second part of the book there is a practical laboratory course of dairy bacteriology, including the examination, cultivation, and enumeration of milk bacteria.

There is no doubt that the book will be of value to those for whom it was designed and that it treats its subject very lucidly. The book contains a few misprints but is clearly printed and satisfactorily illustrated.

LIBRARY TABLE.

Technique Chirurgicale Journalière au lit du Malade. (*A Handbook of Clinical Methods in Surgery*). By Dr. A. BESSON, Maître de Conférences in the Faculty of Medicine at Lille. Second edition, revised and enlarged. Paris: Vigot Frères. 1908. Pp. 249, with 28 figures. Price 3 francs.—This is a capital little book of a kind familiar to English medical students. We will not go so far as to say that it is better than similar publications in our own language but it certainly challenges comparison with the best of them. Dr. Besson writes clearly and treats of all such matters as splints, plasters, injections, lavages, instruments, sutures, and so on, in a really instructive manner. The main headings are alphabetically arranged and the book opens with a section on anæsthetics, in which 70 pages are devoted to general and 16 pages to local anæsthesia. The chapter on chloroform is excellent, though we cannot agree with the statement on p. 23, "Tous les appareils, masques, etc., sont parfaitement inutiles," which indeed seems to be contradicted later, as eight pages are devoted to describing some of the "appareils" devised for its administration. It is interesting to read: "En obstétrique on emploie la chloroforme à la reine (Victoria d'Angleterre)." Tests for the purity of chloroform are given. With regard to ether the author says, "The student and practitioner will quite certainly have to give chloroform more or less frequently, but they may go through their whole careers without ever once giving ether," a statement which does not indicate that anæsthesia as set forth is sufficiently dealt with or presented in the wider range adopted in England. The technique of anæsthesia by scopolomaine, cocaine, and eucaine (by lumbar puncture and local) is described, though we have not noticed any reference to the adrenalin combination with the last drug. We disagree with the author when he prefers to make plaster splints by pouring the water on to the plaster instead of *vice versâ*. In a useful section on the technique of Bier's hyperæmic treatment stress is laid on the leucocytic theory of its action, but opsonins are not even mentioned. But the book contains a solid mass of useful information.

Medical Laboratory Methods and Tests. By HERBERT FRENCH, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician to Guy's Hospital, &c. Second edition. London: Baillière, Tindall, and Cox. 1908. Pp. 175. Price 5*s.* net.—We gladly welcome a second edition of Dr. French's excellent little work which gained such favourable notice when it first appeared nearly four years ago. The general get-up of the book is little altered, though the use of black type for headings in place of italics makes reference easier. Some expansion in size has taken place, new methods being included—as, for example, those for opsonic investigations. The illustrations have also for the most part been replaced by more artistic, though not necessarily more useful, pictures. We are a little surprised that the silhouette figure of hydatid hooklets still remains, as it gives a false impression of these transparent little objects. Why also in the description of pancreatic cyst fluid is no mention made of the possible presence of a fat-splitting ferment? A number of coloured illustrations have been added which we do not altogether welcome, as we feel that the increased price of the book is probably due to their inclusion, and on the whole we think that the cheapness of the original edition was a merit which is hardly compensated by these more showy adornments. The contents of the book are, however, admirable and it continues to form a most useful handbook, almost indispensable to students and practitioners.

The King's College Hospital Book of Cooking Recipes. London: Longmans, Green, and Co. 1907. Pp. 272. Price 1*s.*—This unpretentious little book consists of a collection of recipes contributed by friends of the hospital and it is published in aid of the fund for the removal of the hospital to South London. Those responsible for the compilation modestly hope that as cookery books go this one will be found to be no bad shillingsworth. Many of the directions in the book have been submitted to the test of trial with highly satisfactory results. They have been found to be sufficiently clear for general guidance and in many instances the outcome has been cordially approved. Although the general style is devoid of literary grace we have discovered one recipe cast into some 14 lines of verse, rather

reminiscent of the efforts of Silas Wegg. There is so much that is good in this little book that it is sure to run to a second edition, when we hope that some of the features of the last seven pages may be carefully revised or even omitted. Furniture polish and a cough mixture seem rather out of place amongst articles calculated to whet the appetite. But after all charity covers a multitude of sins, and the charitable object of this book encourages us to dwell rather on the general value than to seek for minor blemishes.

Merck's 1907 Index. Third edition.—This index is by no means a mere commercial compilation; it is really a valuable pharmaceutical encyclopædia giving the names and synonyms, formulæ, physical constants, solubilities, physiological effects, doses, and so forth of the chemicals and drugs used in medicine. We have found it to be a very useful source of reference for information in regard to more or less rare or novel drugs and allied preparations.

Thermo chemistry. By JULIUS THOMSEN, Emeritus Professor of Chemistry in the University of Copenhagen. Translated from the Danish by KATHARINE A. BURKE, B.Sc. Lond. London: Longmans, Green, and Co. 1908 Pp. 495. Price 9*s.*—Of recent years the study of thermochemistry has proceeded apace and results have been gained which have considerably developed our knowledge of the nature of chemical change. There has been no more ardent or successful worker in the field than Professor Thomsen of the University of Copenhagen, and the gratitude of all English students of chemical science is due to the translator of the volume before us for putting before them in clear terms the results of his labours and his views. His researches extended over a period of 20 years and the results were published during the years 1882 to 1886 in a four-volume work entitled "Thermo-chemische Untersuchungen." The present work renders these results more accessible. As the translator points out, since the fourth volume of the original work was published in 1886 the conception of ionisation has been introduced into chemistry and therefore many of the statements which Professor Thomsen made are now generally interpreted by the light of that theory. This, however, does not detract from the value of the original work and "most of the numerical relationships shown by Professor Thomsen are independent of theory." The book is divided into four parts, the formation and properties of aqueous solutions being considered first, then the compounds of non-metals, next the compounds of metals with non-metals, and finally organic substances. Some idea of the complex machinery which the investigation of thermo-chemical problems involves may be gained from a drawing of the apparatus used for measuring the heat of formation of hydrogen chloride on page 190. The book may safely be assigned the position of a standard work on the subject.

Reminiscences. By GEORGE SAUNDERS, C.B., M.D. St. And., Deputy Inspector-General of Hospitals. London: James Nisbet and Co., Limited. 1907. Pp. 93. Price 1*s.* net.—Last week we recorded the latest honour which has been paid to the heroine of the Crimean war and we have now the opportunity of noticing the services to humanity which were given by another worker in that campaign of evil memory. Dr. Saunders, who was then surgeon to the 47th, and subsequently promoted staff-surgeon, well bore his share in a heart-breaking task and has some fresh tales to add to the horrible record of mismanagement in the Crimea. He subsequently was stationed at the Cape, and later in Asia, at Hong-Kong and Yokohama, where his work won the notice of the home Government. Of all these places Dr. Saunders has chatty reminiscences but his object in publishing them is that he may clearly testify in his eighty-fifth year to the faith that is in him. Very early in his professional career he became imbued with profound religious convictions and has since used constant efforts to impart to others the spiritual comfort which they have afforded him. In the army he became a notable evangelist, a voluntary work which must often have needed not a little moral courage, and when he retired from the service in 1871 he devoted himself to medical mission work amongst the poor, first in Liverpool and then in London, where he became the founder of the London Medical Mission.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

SYNTHETIC CAMPHOR (SCHERING).

(A. AND M. ZIMMERMANN, 3, LLOYD'S-AVENUE, LONDON, E.C.)

THIS beautifully white crystalline product represents a triumph of synthetic chemistry. It is stated on very good authority that synthetic camphor is identical in its constitution and action with the natural product and that it can be employed for therapeutic purposes in exactly the same manner. Synthetic camphor, although it is only very slightly different from the natural product as regards its optical behaviour, yet is identical in all other physical and chemical properties.

SELF-RAISING FLOUR.

(SYDNEY W. BUSH AND SON, BATH.)

An examination under the microscope as well as a simple chemical test sufficed to explain how this flour is "self-raising." It contains a small quantity of ingredients which interact on moistening, disengaging carbonic acid gas. The flour is of good quality and serves as an excellent material for the preparation of bread and pastry. From the quantity of mineral matter and proteins present it is evident that the flour contained the maximum amount of cereal nutritives.

CLOPIA (TEA).

(THE AGENT-GENERAL FOR THE CAPE OF GOOD HOPE, 98, VICTORIA-STREET, WESTMINSTER, LONDON, S.W.)

We are informed by the Trades Commissioner for the Cape of Good Hope that clopia, which is gathered from a bush growing wild in Cape Colony, is used as a substitute for tea. It is further stated that it has been found of value in cases of dyspepsia and rheumatism and by those with whom ordinary tea disagrees. We have submitted clopia to careful examination but we were not able to detect any alkaloid present. It yields some oil on suitable extraction and on treatment with boiling water a clear fluid having a colour like tea. On evaporation of this fluid a gummy residue is obtained amounting to 16·0 per cent. The mineral matter was 2·0 per cent. and contained alkaline salts. The protein amounted to 6·17 per cent. We have no knowledge of its use in practice but it is stated that clopia is liked in the colony and has been used with benefit according to the testimony of medical men there. It occurs in the form of needle-like spines of a brownish colour.

CARLSBAD SALTS AND WATERS.

(SOLE AGENTS: INGRAM AND ROYLE, LIMITED, EAST PAUL'S WHARF, 26, UPPER THAMES-STREET, LONDON, E.C.)

A point in distinct favour of the Carlsbad waters, or of the salts obtained by the evaporation of the waters, is that they show a constancy of composition which is of importance from the therapeutic point of view. We have examined the waters of Carlsbad and the salts more than once and on making a recent analysis the quantity of salts present showed little, if any, variation. The natural Carlsbad Sprudel salt is supplied in two forms, one a fine dry powder and the other in a crystallised state—that is to say, containing water of crystallisation. Of course, the quantity of salt in the dry powder

is greater owing to the absence of water of crystallisation. The dry powder contains about 46 per cent. of sulphate of sodium (with some sulphate of potassium), about 17 per cent. of chloride of sodium, and a little over 30 per cent. of bicarbonate of sodium. The water of the "Sprudel" contained, we found, a total of 52·70 grammes of salts per litre, the water of the Mühlbrunnen 52·30 grammes, and the water of the Schlossbrunnen, 54·0 grammes. The value of a course of Carlsbad water in various disordered conditions of the stomach, liver, intestines, and kidneys, is well known. The powders, of course, are not only purgative in their action but are also decidedly antacid by reason of the important quantity of bicarbonate of sodium occurring in them.

CHLOROFORM PURISS. B.P. (PLANET BRAND).

(MAY AND BAKER, GARDEN WHARF, CHURCH-ROAD, BATTERSEA, LONDON, S.W.)

We have carefully submitted this chloroform to a number of tests and the results were entirely satisfactory and in accordance with the guarantee that it is absolutely pure chloroform. The specific gravity was 1500. The evaporation of 20 cubic centimetres gave absolutely no residue. The chloroform was also free from any trace of decomposition products, as, for example, chlorine or carbonyl chloride.

"HUMANISED" MILK.

(THE HYGIENIC DAIRY SOCIETY, 26 AND 27, BUSH-LANE, LONDON, E.C.)

This is milk of excellent quality containing, according to our analysis, a maximum amount of the various nourishing constituents. The milk was particularly rich in cream, the amount of fat being as high as 5·00 per cent. The milk is carefully sterilised and accordingly was found to be sweet and sound on opening the bottle. No preservatives were traced. The total solids amounted to 12·70 per cent. and the mineral matter to 0·70 per cent. These results exhibit the composition of rich cow's milk which will bear dilution to approximate to the composition of human milk.

MALT EXTRACT BEER.

(THE STEVNS BREWERIES COMPANY, LIMITED, COPENHAGEN. LONDON: 1, WALBROOK, E.C.)

Analysis showed that this was a practically non-alcoholic beer containing a large proportion of malt extractives. The extractives amounted to no less than 22·75 per cent. In fact, the beer presented the composition of a rich malt extract. There can be little doubt, therefore, of its nourishing qualities. The alcohol by volume amounted to less than 1 per cent. The flavour was rich and malty.

VIRGINIA ETNA LITHIA WATER.

(THE VIRGINIA ETNA LITHIA SPRINGS COMPANY, 60, ST. MARY AXE, LONDON, E.C.)

Our analysis of this water agrees practically with that published in a pamphlet submitted to us. We found that the total mineral salts amounted to 42 grains per gallon, the principal ingredients being calcium sulphate, sodium sulphate, magnesium carbonate, and calcium carbonate. The quantity of lithia present is small and does not exceed four grains (calculated as bicarbonate) per gallon. Its shown presence was by the spectroscope after separating the lime salts. The water is regarded as valuable in the treatment of gout and rheumatism and urinary disorders. It shows an excellent condition of organic purity.

BORDEAUX NECTAR.

(PETER R. MCQUIE AND SON, 19, SOUTH JOHN-STREET, LIVERPOOL.)

The features of this excellent grape juice are a freedom from alcohol and the absence of preservatives. It has a pleasant acidulous taste and forms an excellent beverage diluted with aerated water. Analysis gave the following results: total extractives, 16·20 per cent.; mineral matter, 0·30 per cent.; sugar, 14·70 per cent.; and tartaric acid, 0·645 per cent. The juice thus contains practically the entire constituents of the grape.

IOLA FOOD.

(C. MELIN AND CO., 37, CRUTCHED FRIARS, LONDON, E.C.)

Iola food occurs in the form of a jelly with a pleasant fruity flavour. Our analysis shows that it must be regarded as having distinct nourishing qualities since it contains not only an easily digested sugar but 10 per cent. also of protein as well as 1·76 per cent. of mineral salts rich in phosphates. It is practically soluble in water and is a very palatable and easily assimilated food free from acid, starch, and fat. The food in fact shows an alkaline reaction to litmus paper.

OATMEAL STOUT.

(MATTHEW BROWN AND CO., LIMITED, POLE-STREET, PRESTON.)

The analysis of this stout was as follows: alcohol by volume, 5·78 per cent.; extractives, 4·70 per cent.; mineral matter, 0·45 per cent.; and protein, 0·41 per cent. Though the amount of malt extract is relatively small, yet this contains about 10 per cent. of protein, while the mineral matter is rich in phosphate. These respective dietetic gains are due, no doubt, to the use of a proportion of oatmeal in the brewing process. The stout was in sound condition and possessed the delicate bitter flavour of genuine hop and also that of malt.

GLAXO.

(JOSEPH NATHAN AND CO., LIMITED, 83, GRACECHURCH-STREET, LONDON, E.C.)

Glaxo presents according to our analysis exactly the same food elements as does cow's milk, leaving out of account the water, but the constituents have been modified with the view of increasing their digestibility. The results were as follows: fat, 30·90 per cent.; proteins, 24·16 per cent.; milk sugar, 36·64 per cent.; mineral matter, 5·00 per cent.; and moisture, 3·30 per cent. The amount of fat present, as it is said, in the form of fatty acid is remarkable. It represents the maximum found in cow's milk of good average quality. The powder was soluble in water but some of the fat separated in a form resembling butter and rose to the top. It is seldom that dry preparations intended for the feeding of infants and invalids are found to contain such a large proportion of fat. The many dietetic purposes to which glaxo may usefully be put are obvious and we can well believe the statements that have reached us in regard to the satisfactory results which its administration for the purposes of a food has secured.

SACRATINTA (SACRAMENT L WINE).

(H. STODDART AND CO., 20, SUFFOLK-STREET, PALL MALL, LONDON, S.W.)

The analysis of this wine was as follows: alcohol, by volume, 13·43 per cent.; extractives, 24·72 per cent.; and mineral matter, 0·57 per cent. The extractives consisted chiefly of sugar, and having regard to the amount it may be judged that the wine is very sweet to the taste. We do not doubt that it is a pure grape wine and the amount of alcohol indicates that it is of natural strength and unfortified.

CELLULON BREAD (DIABETIC).

(CALLARD AND CO., 74, REGENT-STREET, LONDON, W.)

We have not examined a specimen of bread (practically free, as this is, from starch) with a more satisfactory flavour. It is difficult to believe, judging from its taste, that the bread is not made from fine whole wheat meal, and yet the starch, and, indeed, the total carbohydrates, according to our analysis, are less than 3·0 per cent. It is particularly palatable when eaten with butter. The bread was quite attractively moist and kept so for some time. The protein amounted to 22·93 per cent. and the fat to 9·30 per cent. The bread is obviously suitable for the diet of the diabetic and others to whom foods rich in carbohydrates are undesirable.

THE LANCET.

LONDON: SATURDAY, MARCH 28, 1908.

The Humane Slaughtering of Animals.

A CIRCULAR which is dated March 20th has been issued by the Local Government Board on the humane slaughtering of animals. It is addressed to the councils of boroughs and of urban and rural districts, and calls their attention to certain recommendations made by the committee appointed by the Admiralty to investigate this matter. These recommendations were published in 1904 and, recognising their importance, the Admiralty built at the dockyards of Chatham a model slaughter-house where the advice given is actually put into practice. Apparently, however, this example has not been of much service, since to-day these facts have to be recalled by the circular which the Local Government Board has sent to the local authorities. It is, indeed, somewhat discouraging to find that, in spite of all that has been written and said during the last three years concerning the dangerous and unsatisfactory condition of the meat-supply in this country, so few improvements have been effected. The circular now before us deals only with the question of humane slaughtering, though in actual practice public health and the kind and considerate treatment of animals are inevitably and intimately associated. The abolition of private slaughter-houses is desirable because they cannot be efficiently inspected and diseased meat is therefore less likely to be discovered, seized, and destroyed, whilst cruelty is less likely to be observed and checked. Thus the two interests, the claims of humanity and the claims of hygiene, go hand in hand.

There is, however, a difficulty—an important point where the two interests may fail to harmonise. From the sanitary point of view, which means the securing of ample room, light, air, and cleanliness, and the greatest possible facilities for inspection and control, the slaughter-hall is preferred to small and separate compartments. All the model abattoirs are built on this principle and not only is sanitation in every respect more easily maintained but the cruel treatment of any animal can at once be seen. This, of course, cannot be the case where there are only small private slaughter-houses in different parts of the town or even where a large public abattoir is divided up into small slaughter-chambers. But the circular raises a difficulty, for it says that the animals about to be killed must not see into the slaughter-house. In that case the slaughter-hall would cease to be a place for slaughter, and this is the actual condition of things at the model abattoir built in the Chatham dockyards. At Chatham the animals are brought to a place just outside the walls of the great hall. Here they are felled and then only is a sliding door opened and with the aid of ropes and pulleys the carcass is promptly drawn into the large hall. But the number of cattle killed there is very small and it would not be possible to kill more than two horned animals at the same time. If, however, it was necessary to kill 20 or 30 cattle at the same time, an equal number of sliding doors and pulley arrangements would be required and this might prove somewhat complicated. As a rule the animal is killed on the spot where its carcass is to be cut open and converted into meat. But when this is done in a large slaughter-hall the animals must see something of what is going on around them. Yet the circular says that the animals should, as far as possible, not be placed in contact with the sights and smells of the slaughter-house. Certainly, the waiting pens where the cattle are resting, perhaps for some days, should be well away from any smell or sight of blood, hides, offal, or anything likely to cause alarm. But at the last moment, in what are considered the best abattoirs in the world, the animals are killed in the slaughter-hall itself and not outside. The Admiralty committee in its report, and the passage is quoted in the Local Government Board circular, says: "There is no point which the committee have more carefully investigated than the question as to whether animals do or do not suffer fear from this contact, and the evidence of those best qualified to judge is so conflicting that no absolute verdict can be given." The report adds that the cattle frequently show great reluctance to enter the slaughter-chamber. Undoubtedly this is so where there is a ghastly display of blood, offal, and carcasses. But in a model slaughter-hall the blood is washed away as fast as it is spilt and the whole place is so light, bright, fresh, and clean that the animals are not so likely to be alarmed, and we are not aware that any complaints have been made on this score. On the other hand, the advantages of the large slaughter-hall system are so positive in every other respect that it would be regrettable if the effect of the circular just issued was to delay the construction of abattoirs on the ground that animals brought into a large slaughter-hall cannot be prevented from seeing each other. At the same time, short of delaying reform that is urgently needed, it would be an excellent thing to give the animals, as suggested in the circular, the advantage of the doubt and to slaughter them outside the walls of the great hall, as is actually done at Chatham.

Wherever the animals are killed, it is absolutely imperative if there is to be no cruelty that none but well-trained and highly skilled slaughterers should be allowed to kill. That is another reason for abolishing private slaughter-houses and concentrating the whole business in a public abattoir. Therefore, and very properly, the circular urges that "none but licensed men shall be employed in or about slaughter-houses," and we are of opinion that such licences should be withdrawn in the event of the holders being found guilty of negligence or cruelty. At present there is no law by which local authorities can prohibit a person who does not hold a licence from slaughtering. But, of course, if there was a public abattoir the authorities could refuse to employ unskilled and unqualified slaughterers. In this country, moreover, the examination of the meat put on the market is not at present carried out with anything like the care and thoroughness which are exercised in Germany. The public abattoirs in England, as in Germany, should therefore be utilised as theoretical and

practical schools for teaching all technical matters connected with meat-supply. Then, and then only, will it be possible fully to comply with the requirements of the Local Government Board that animals should always be killed by properly trained and licensed slaughterers.

The London County Council and the Inebriates Act of 1898.

Is the State solely responsible for the control and maintenance of criminals, lunatics, and other classes of defective persons who need segregation in the interests of the community, or should local authorities be expected to undertake or to share this unpleasant duty? This ancient question, which has been settled, probably for all time in this country, so far as criminals are concerned, remains open when the other classes fall to be dealt with. The growing opinion of all thoughtful people has certainly been that in respect of inebriates the State and the local authorities should share the burden, and this view found expression in the Inebriates Act of 1898. This Act was passed to facilitate the better treatment and control of habitual drunkards. The desirability of such a measure, to render unnecessary the repeated imprisonment of drunkards, had been obvious for some years previously and it was welcomed by all who took an intelligent interest in the welfare of this unfortunate class. Certain institutions were called into existence known as reformatories for inebriates, to which judges and magistrates could send persons who became qualified for committal by reason of drink-caused crime or persistent public drunkenness and disorder. The State was authorised to provide accommodation for criminal inebriates sent from higher courts and local authorities or private persons were permitted to establish institutions for the reception of drunk and disorderly persons committed from petty sessional courts. The State was given power to pay the whole cost of the former class and to share with local authorities the maintenance of the latter. No difficulty has been experienced in working the Act so far as it relates to criminal inebriates maintained entirely by the State, but considerable difficulty has been experienced in inducing local authorities to accept any responsibility in regard to those other cases committed under the section (Section 2) which allowed of combination for maintenance cost, where necessary, between county or borough councils and the State.

When the Act became law the Government decided to facilitate the establishment of institutions by agreeing to pay a fixed capitation grant of money for every inebriate person committed from a petty sessions under Section 2 of the Act, provided that the local authority having jurisdiction over the area within which the court was situated also agreed to contribute towards the maintenance of every person so committed. Having at the time no actual experiences but only estimates as a guide the Secretary of State found it impossible to calculate the exact amount which would be necessary for the proper maintenance of inmates; but a sum of 10*s*. 6*d*. per head per week was decided upon as an experimental amount to be given to managers of reformatories by the Treasury, provided that local authorities also contributed 7*s*. per head from local funds, making 17*s*. 6*d*. in all. The Government contribution of 10*s*. 6*d*., although only guaranteed for three years, was continued without change for seven years. At the end of seven years experience warranted a reduction in the Government grant. The accounts of seven out of eight institutions in full working order during 1906 showed that cases were being detained at a cost varying from 10*s*. 4*d*. to 14*s*. per inmate per week; but, the eighth, "Farmfield" (managed by the London County Council) was not conducted at less than a weekly rate of 18*s*. 6*d*. per head. It was felt that 14*s*. per week should be considered the total amount necessary for maintenance and that the managers of all reformatories should be induced to bring down their expenses to that sum per head. Moreover, in furtherance of the view that the segregation of inebriates relieved imperial and local funds about equally it was decided that the Government contribution should be reduced from 10*s*. 6*d*. to 7*s*. to correspond with the 7*s*. provided by local authorities. This reduction, which marked in the simplest and most obvious way the joint responsibilities of the State and the local authorities, was accepted as reasonable by the managers of reformatories, except, unfortunately, in the case of the London County Council, and the fear is lest the exceptional attitude of the London County Council should, by example, operate to the detriment of a valuable piece of legislation. At an early date after the passing of the Inebriates Act of 1898 the London County Council established a reformatory at Farmfield, near Horley, for the reception of 100 female inebriates. It soon became evident that more accommodation would be necessary and the Council accordingly contracted with the National Institutions for Inebriates for the reception of all cases unable to be received at Farmfield, agreeing to pay 7*s*. per head per week for each case. Under this arrangement, at the end of last year, about 600 London inebriate women were under reformatory care, 100 at Farmfield and 500 in the reformatories managed by the National Institutions for Inebriates. But in May last the Council gave notice to terminate its agreement with the National Institutions in the following December unless the Government grant of 10*s*. 6*d*. were reverted to for all cases committed under Section 2 of the Act. As such action by the Government would have supplied an unnecessary amount of money to the managers of institutions who did not need, or ask for, any increase and would have entailed a large increase of unjustifiable public expenditure, the offer of the Council was declined and the contract between the Council and the National Institutions for Inebriates accordingly ceased on Dec. 31st, 1907. A few vacancies amongst the 100 beds at Farmfield will probably be available from time to time, but these will be so few as practically to render the Inebriates Act useless so far as London is concerned, which means that at least 500 women now under the only sort of care which can save them from themselves and protect the community from the results of their weakness will be thrown back upon the streets, police courts, and prisons without hope of reform.

In short, the step now taken by the Council will involve reversion to the discredited system of treating inebriates (many of whom are diseased, epileptic, and mentally

defective) with short and repeated terms of imprisonment as the only means of dealing with them. If any English statute gave the State power to deal properly with these persons much might be said for insistence upon the work being carried out by the central authority; but Parliament saw fit to lay equal onus upon State and local funds and the action of the London County Council in practically refusing to make adequate provision for the inebriates in its jurisdiction is blocking the progress of a movement which has been demanded by experience, science, and humanity. This action of the Council, in regard to London inebriates, certainly saves something like £6000 a year in cash, but the economy is only on the surface as everyone who knows what is the cost to the community of dealing with drunkards upon the old-fashioned lines is perfectly aware. It is to be hoped that some compromise may be effected or some argument be brought to bear upon the London County Council before the inevitable evils of its action begin to be felt.

The Degree of Personal Communicability of Pulmonary Tuberculosis.

THE problems involved in the etiology and modes of infection of pulmonary tuberculosis are of such complexity and of so debateable a character that, in spite of the most assiduous and critical attention which has been devoted to them from very various standpoints by many painstaking observers, they are exceedingly difficult to solve and at the present time great confusion exists in regard to many of them. Apart from the question of the channels of infection, whether preponderatingly alimentary or respiratory, which has received so much notice within recent years, one of the most vexed of these problems is that concerned with the determination of the degree of infectiousness of pulmonary tuberculosis from person to person. The question is one of the greatest practical importance from the point of view of preventive measures directed to lessening the incidence of that disease and also from that of the attitude of the public generally towards the consumptive person. We have on more than one occasion deprecated the tendency to treat the sufferers from this disease as pariahs sedulously to be avoided, which the current views as to the spread of pulmonary tuberculosis have fostered with a not inconsiderable section of even the more thoughtful members of the public, thereby inflicting needless pain and suffering upon a class of person already sorely stricken in the battle of life.

In the interesting report on "Sanatoria for Consumption and certain other Aspects of the Tuberculous Question," prepared by Dr. H. TIMBRELL BULSTRODE and published as a supplement to the twenty-fifth annual report of the Local Government Board, which we have already noticed in a leading article,[1] a chapter of considerable interest is devoted to a consideration of "the degree of personal communicability of pulmonary tuberculosis." The evidence on this subject, which has been carefully collated and arranged by Dr. BULSTRODE, shows how difficult it is with the data at present available to form any definite judgment in this connexion and also to what extent the evidence adduced both for and against the main thesis is open to criticism. The statistics most frequently appealed to in order to throw light upon this question are those of the staff and attendants at institutions specially set apart for the care of consumptives and those of the apparent infection between husband and wife. In regard to the statistics derived from the incidence of tuberculous disease of the lungs in officials at hospitals or other institutions for the care of consumptives various statements are on record. There are in the first place the well-known statistics of Dr. C. THEODORE WILLIAMS of the hospital attendants at the Brompton Hospital for Consumption, which appeared to show that the incidence of the disease was not greater than the average among the civil population of a town even before the days of special precautions. Dr. BULSTRODE quotes other statistics to the same effect, such as those of Falkenstein, Görbersdorf, the Friedrichsheim Hospital at Berlin, and various other institutions. He refers to the criticisms of CORNET who is an advanced contagionist (this is Dr. BULSTRODE'S not over happy term) and thinks that the figures are too small and that the observations extended over too short a period to allow of definite conclusions being drawn. CORNET also alludes to the experience of certain Prussian nursing orders which appears to support the hypothesis of contagion. The figures derived from these sources have in turn been subjected to a careful mathematical analysis by Dr. W. H. HAMER at Dr. BULSTRODE'S suggestion and prove to be far from convincing or free from objection. For comparison, some figures in regard to the infectivity of other diseases generally believed to be directly infective, such as enteric fever, scarlet fever, typhus fever, and diphtheria as illustrated by the staffs of fever hospitals, are quoted and prove to be far more suggestive of direct infection. It might have been supposed that in regard to the transmission of pulmonary tuberculosis between husband and wife there would be a ready means of obtaining most valuable direct evidence upon the point at issue. It must be confessed, however, that whereas the consideration of individual instances would seem to be very highly suggestive of direct personal infection, yet when general statistics are reviewed in regard to this matter they are far from conclusive and cannot be said to afford strong evidence of contagion.

Many of the sanitarian authorities of this country, notably Dr. A. NEWSHOLME and Dr. J. NIVEN, to whose work frequent reference is made in Dr. BULSTRODE'S report, have devoted considerable attention to the influence of association with the subjects of known tuberculous disease as a factor in the spread of that disease. Dr. NEWSHOLME, who attaches great importance to case to case infection, suggests that the segregation of patients in workhouses and infirmaries has been an important factor in producing the fall in the death-rate from pulmonary tuberculosis which has occurred in recent years. This contention has been adversely criticised by many observers, including Dr. NIVEN. Dr. BULSTRODE summarises these objections in a very able manner. From the statistical point of view, therefore, the evidence of personal contagion in pulmonary tuberculosis is obviously most unsatisfactory and the conclusion of Sir HUGH BEEVOR which is quoted in the report to the effect

[1] THE LANCET, Feb. 1st, 1908, p. 385.

that the term "infectious" is too loose a term to apply to both measles and tuberculosis, suggesting the term "sub-infectious" for the latter, would seem to be one which adequately expresses the present state of opinion on the matter. Assuming for the moment that case to case infection is an established fact it is of some interest to consider the results of experiments in regard to the infective character of the sputum of tuberculous patients devised with the object of determining the manner in which air-borne infection takes place. Here, again, there is no unanimity of opinion and Dr. BULSTRODE in his report gives a useful *résumé* of the contentions of the two conflicting schools of opinion—viz., the theory of dust-borne infection by dried bacilli, resting upon the experiments of KOCH, CORNET, and others, and that of droplet infection through coughing, of which FLÜGGE is the chief exponent. The experiments in regard to dried sputum are so well known and have exerted such an influence in regard to the manner of dealing with sputum that no special reference to them is necessary; those of FLÜGGE and his followers, on the other hand, have not at the present time obtained the notice which they deserve. The presence of bacilli in the fine impalpable droplets of saliva or sputum sprayed from the patient during the expiratory efforts of sneezing, coughing, and loud speaking has been definitely shown, and experiments further demonstrate that these droplets may be widely disseminated, even to some considerable distance from the patient. FLÜGGE and his followers believe that the danger of infection from such droplets is much greater than that from dried bacilli in dust. Numerous observers, notably RANSOME and DELÉPINE in this country and CADÉAC in France, have maintained that the tubercle bacillus rapidly loses its virulence in daylight and if exposed to air, while on the other hand CADÉAC confirms the danger of bacilli in the moist state in droplets. The practical inference to be drawn from such experiments is that the consumptive person should be taught to cough into the sputum flask as well as to spit into it, or that he should hold his handkerchief before the mouth during coughing or sneezing—a precaution which is now taught in many sanatoriums but is by no means generally adopted by the sufferers from pulmonary tuberculosis or even taught by those who have charge of them. It is obvious that the factors which lead to infection with the tubercle bacillus are, as in all other infections, those of exposure to infection and of defective resisting power. Pathological observations seem to show that at some time in their lives the majority of people become the host of the tubercle bacillus by some channel or other. The problem is therefore complicated in any given case by the possibility of auto-infection from a lesion long quiescent. There is a danger that the uncertainty which exists in regard to personal infection, and the growing importance which is being attached to conditions of general and personal hygiene, may lead to a lessening of precautions in regard to the bacterial factor in the disease, which would be a condition most deeply to be deplored. While uncertainty exists in regard to the spread of such a widespread disease the most rigid precautions should be carried out, the more so that these precautions are only those which cleanliness and decency dictate. If therefore the consumptive observes such precautions it is a hardship to treat him as if he were a dangerous person. On the other hand, we welcome the efforts which are now being made to deal with the matter of the personal factor of susceptibility by endeavouring to improve the conditions under which the population generally live and work.

Annotations.

"Ne quid nimis."

THE SUPPLY OF PURE MILK.

Dr. J. Niven has made an important contribution to the local press of Manchester on the best way of insuring a supply of pure milk. He says that the report of the Royal Commission on Tuberculosis has added to the evidence that "tuberculous milk powerfully reinforces the store of human tuberculosis." To check human tuberculosis and to render the dairying industry of the country more prosperous he says that the dairy farms must be provided with a sufficiency of well-constructed, well-lighted, and well-ventilated cowsheds of a prescribed cubic capacity per cow, and tuberculosis must be eradicated from the herds. We know that badly built, dark, and dirty buildings which cannot be readily or completely cleansed or disinfected are in many parts of the country the rule rather than the exception. Here the presence of one cow, so affected as to part with tuberculous matter, might infect the others without it being possible to remove the infection from among them. Unless such premises could be thoroughly disinfected it would be of no use to substitute a fresh herd free from the disease and to expose them to the danger of being infected. Something, however, has been done in Manchester since 1896 to reduce the quantity of tuberculous milk taken into the city. The cowsheds of the city have been largely reconstructed. The Manchester Pure Milk-Supply Company has effected much good. In 1899 the Manchester milk clauses were obtained and by the way in which they have been carried out the amount of tuberculous milk going into the city has been reduced more than one half, the mortality from tuberculous diseases has fallen considerably and the stock kept in dairies supplying Manchester has much improved. Professor S. Delépine bears witness that the general disease-producing power of the milk going into the city has been greatly reduced and that the degree of cleanliness is much higher. But, as Dr. Niven remarks, all these means "are not calculated to lead to the entire suppression of tuberculous milk." There seem to be two courses open: "One is to schedule open, or clinical, tuberculosis as a contagious disease and to remove from the herds plainly tuberculous animals. The other is to eradicate tuberculosis from dairy herds." This would involve the creation of a veterinary public health service. Their duty should be to determine what farms are at present fitted to have their stock rendered non-tuberculous and to take the necessary action. Such farms, few at first, would gradually increase and might be used for raising non-tuberculous stock. Dr. Niven goes on with an ingenious scheme, dealing with millions sterling, the elaboration of which must have been a joy to a mathematical mind, which scheme would in about 15 years have well repaid the cost to the country in the economy of life and the increased prosperity of the dairying industry. But if tuberculosis is eradicated from our dairy cows there still remain the dangers of contamination between the cow and the consumer. Scarlet fever and enteric fever are easily carried and it may prove almost more difficult to guard against such dangers than to eradicate tuberculosis.

FORESTRY AND HYGIENE.

"Alexander von Humboldt," writes an Italian correspondent, "measured the decline of a nation's vitality by the destruction of its woods, and certainly it is among those nationalities of modern Europe that are the mere *simulacra* of their mighty past that the coincidence pointed out by the German philosopher finds aptest illustration. Greece, Italy, Spain in the day now passing look wistfully back to their former selves, now well-nigh unrecognisable by the denudation of what was once their ornament and pride. Mainland and island in the modern Hellenic State are, in respect of their sylvan covering, at once 'naked and ashamed.' Italy can no longer quote with anything but self-reproach the 'golden lines' of Virgil—

> 'Sed neque Medorum silvae, ditissima terra,
> Laudibus Italiae certent';

and as for Spain it is common knowledge that the majestic oak forests of which Martial sings avenged themselves for their destruction by the ruin of her mercantile marine. Even in countries less backward the reckless tree-felling uncompensated by collateral tree-planting is engaging the serious thought of the legislature—France having just, through her Minister of Agriculture, introduced a Bill to check the wood-cutting 'frenzy' which, in the words of one of her most prominent publicists, 'is now assuming disastrous proportions.' But it is in Italy that this 'frenzy' is most chronic and at intervals most acute. 'We are now,' says an 'ingegnere forestale' (forest engineer), 'consuming in the shape of fuel 13,000,000 cubic metres of timber in excess of the annual production of our woods and plantations, and this although in 1906 we imported timber from Austria-Hungary to the value of 90,000,000 francs. In the case of the chestnut alone we are like a man who with the income of 7000 francs (£280) spends 10,000 francs (£400).' The poor chestnut! Who that knows Italy can have failed to admire the beauty of that classic tree, whether he has paced, as Macaulay sings,—

> 'In April's ivory moonlight
> Beneath the chestnut shade,'

or watched on picturesque uplands the steady growth and output of the 'castaneae nuces,' on which the hardy peasantry are as dependent for food as the Irish on the potato? But now its extinction is seemingly but a question of time, so heavy is the yearly toll which it pays to the wood-cutter who has to meet the ever-increasing demands of the tanning industry, insatiable for the gallic and tannic acid which it yields. In the meteorological sphere the destruction of the woods and forests—in other words, the reduction of the hill-sides and low-lying plains to so much prairie—is scarcely less to be deplored. On the testimony of the medical climatologist the health—to say nothing of the amenity—of whole provinces has been changed for the worse, say, within the last 50 or 60 years by the disappearance of the timber, and this quite apart from the progressive devastation wrought by the summer hail storms and the autumn flood. Alternations of temperature, at once violent and rapid, are experienced in regions

> 'Ver ubi longum tepidasque praebet
> Jupiter brumas,'

in days long subsequent to those of Horace, alternations telling severely on the population and still more on the visitor from abroad and compromising the fair name of Italy as a winter or spring resort for the invalid. All this in its economic, industrial, hygienic, even artistic significance is borne in upon contemporary Italy with a force and an insistence that press from her heart a cry of alarm and inspires legislation which would be salutary if its execution were as effective as its inspiration is sound. But she is only beginning to realise the complexity as well as the magnitude of the task before her. To begin with, she has to create and to foster a more efficient school of forestry than she at present can boast of, that at Vallombrosa, now about to be transferred on a larger scale and with better equipment to Florence, being still her only counterpart to the splendidly appointed schools of Germany and France. Again, she has to organise and to remunerate her army of 'ispettori forestali' (forest inspectors) much more intelligently and liberally than hitherto if her laws for the prevention of unauthorised tree-felling are not to be more 'honoured in the breach than in the observance.' The 'situation,' in fact, must be faced and met with all the machinery, professional and expert, at her command if she is to save herself from disaster before it becomes irremediable. It is to her medical Minister of Agriculture, the Senator Guido Baccelli, that she hitherto owes her best legislation *ad hoc*. It is to the profession of which he is the titular head that Italians are looking most hopefully for the ultimate solution of a problem fraught with momentous issues for many interests, not least for that of the 'salus populi.'"

CHILDREN AS THE STOCK-IN-TRADE OF ORGAN-GRINDERS AND OTHER MENDICANTS.

TWO Italians, Vittorio Violo and Elizabeth Pelosi, were recently sentenced at Marlborough-street police court to one month's imprisonment without hard labour, and recommended for subsequent deportation, for begging in the streets and for using Antonio Pelosi, the two-year-old child of the female defendant, as a means of exciting compassion and obtaining alms. The begging was of the type with which Londoners have for some years been familiar, two foreigners, one male and one female, a baby, and an organ, the impression successfully produced, no doubt, in the minds of benevolent passers-by being that a married couple in poor circumstances are endeavouring to support themselves and their offspring by producing music. In the case before the magistrate it was proved that the man was hired by the woman at a wage of 1*s.* 2*d.* per diem to turn the handle of the organ and that she was a married woman deserted by her husband who had left her with five children. The child taken with her was her own but inquiry showed that such is by no means always the case. Evidence was given by the police that children are frequently hired in order that they may be taken out with organs, that the usual rate of payment for them is 6*d.* a day, and that they have practically supplanted monkeys for the purpose. The sum of £1 4*s.* in silver and bronze was found upon Violo. With regard to the "music" produced by persons of this class opinions seem to differ, but it is obvious that it may often become a nuisance. Presumably the "hurdy-gurdy" player with whom those now middle-aged were familiar in their childhood imported an instrument more or less peculiar to his country and was at first regarded with interest as a foreign performer who was amusing to children and comparatively innocuous. The piano-organ has nothing whatever to do with the country of the persons who play it and is simply a commercial speculation of its manufacturer and of its owner, the latter of whom makes his profit by letting it to the men and women who use it as a means of begging. To the extent to which it adds to the noise and unrest of London life it is prejudicial to the health of the community, but no doubt because it is heard by many more people at a time it brings in heavier contributions of coppers than the hurdy-gurdy ever could. Its use, however, even in those by-streets where children dance to its strains, is intrinsically for the purpose of begging and for no other. With regard to the infants dragged round with it, usually in baskets attached to its carriage, whether these belong to

persons in charge of the organ or not they come under the second section of the Cruelty to Children Act, 1904, which enacts that "If any person causes or procures any child, being a boy under the age of 14 years or being a girl under the age of 16 years, or having the custody, charge, or care of any such child, allows that child to be in any street, premises, or place for the purpose of begging or receiving alms or of inducing the giving of alms, whether under the pretence of singing, playing, performing, offering anything for sale, or otherwise, that person shall on summary conviction be liable at the discretion of the court to a fine not exceeding £25, or alternatively, or in default of payment, or in addition thereto to imprisonment with or without hard labour for any term not exceeding three months." The same section imposes similar penalties upon those responsible for children of the ages above mentioned singing or performing on licensed premises between 9 P.M. and 6 A.M., or at any time of the day when the child is under 11 years of age. It is likewise an offence to expose a child under 16 years of age to pain or to the risk of bodily injury by allowing him or her to be in any place for the purpose of being trained as an acrobat, contortionist, or circus performer, or of being trained for any exhibition or performance which in its nature is dangerous. Exceptions are permitted in order to prevent hardship in cases where no harm to the child is likely to result, and it cannot be said that children are not protected, so far as the law is concerned, from forms of ill-usage likely to be prejudicial to their physical and moral health.

THE TREATMENT OF PULMONARY TUBERCULOSIS.

WE have received a pamphlet entitled "Summary of Report on the New Remedies for Tuberculosis Prepared by Dr. Toru Ishigami, Director of the Ishigami Institute for Infectious Diseases and Sanatorium for Tuberculosis, Hamadera, Osaka." After prolonged investigation Dr. Ishigami has succeeded in obtaining two products for the treatment of tuberculosis which, he maintains, are of great efficacy and without any detrimental "side action." The one is a chemical preparation from tubercle bacilli and is applicable to patients without fever and the other is an immunisation serum and is suitable for patients in an advanced stage of the disease. The chemical product he has named "tuberculo-toxoidin." It is obtained by dissolving the culture of tubercle bacilli in pure sulphuric acid in order to destroy the toxicity and by a further series of processes the remedy is finally obtained in the form of a weak alkaline solution. This substance can be injected subcutaneously without producing any local irritation and may be given in comparatively large doses without injurious effects. Dr. Ishigami gives statistics of the cases which he has treated, and out of 160 patients, 69, or 43·13 per cent., are reported as being completely cured. 219 patients were treated in the same manner by other physicians, and 36·1 per cent. were stated to have been cured, and another 36·1 per cent. were "partially cured." With regard to the immunisation serum, Dr. Ishigami commenced his investigations in 1897. At first he found it difficult to obtain a strong serum free from the characteristic reaction of animal serum so detrimental to tuberculous patients. He finally succeeded in obviating this reaction and in making a thoroughly efficient immunisation serum by injecting his tuberculo-toxoidin. An account is given of the action of the serum in cases of acute tuberculous meningitis, of tuberculous peritonitis, and of painful tuberculous arthritis. The results were encouraging. In cases of pulmonary tuberculosis with high fever or with disordered nutrition, and when the patient is unfit for the tuberculo-toxoidin treatment, the serum injection may be first resorted to until the symptoms become alleviated and the fever disappears and nutrition is improved, when the tuberculo-toxoidin can be employed. 189 patients were treated in this manner, of whom 22·7 per cent. were "completely cured" and 33·33 per cent. "partially cured." Dr. Ishigami has ascertained that the internal administration of the tuberculo-toxoidin and of the immunisation serum is harmless and efficacious. He indicates the classes of cases suitable for this method of treatment. We are informed that a supply of tuberculo-toxoidin will be supplied gratis to any hospital or medical practitioner on application to Mr. R. Wilkinson, care of Messrs. Curtis and Co., Limited, 51, High Holborn, London, W.C.

AN INTERNATIONAL MEDICAL ASSOCIATION AGAINST WAR.

THE International Medical Association for the Suppression of War celebrated the fourth year of its existence by a reunion held on March 21st at the residence of Dr. J. A. Rivière, the founder and President. The association now numbers 3000 medical men of all nationalities. Dr. Rivière in his presidential address mentioned that it was hoped that the association would organise a great manifestation in the cause of peace at the forthcoming International Exhibition which it was intended to hold at Paris in 1911. Various motions dealing with the causes which the association has at heart were proposed and carried, among which were one congratulating Sir Edward Grey on his action regarding Macedonia and another congratulating the Chinese Government upon being willing to submit the difficulty with Japan to arbitration. While, unfortunately, it cannot be considered that the total abolition of war is within sight at present, yet the desire for such is widespread. No body of men knows better than the medical profession the horrors of war as a cause of disease not only among the fighting ranks but also among the inhabitants of the countries concerned, and it is therefore fitting that medical men should be leagued together to insure, if possible, the preservation of peace.

THE SANITARY SAFEGUARDING OF A GREAT RELIGIOUS FESTIVAL IN INDIA.

THE religions of the East are the cause of the gathering together at regular intervals of greater concourses of people than European cities are accustomed to accommodate, if we except the massing of armed forces, and these religious gatherings are occasioned by pilgrimages to some temple or sacred city from far and near. It is obvious that such pilgrimages are fraught with the gravest danger to the public health, for the devotees may come with the seeds of all sorts of infective disease developing in them and one case of cholera or plague breaking out in such a herded company is as a spark dropped into gunpowder. During the summer of last year we published a series of articles from the British Sanitary Commissioner with the Constantinople Board of Health dealing with the accommodation and arrangement of the nine lazarets, or quarantine and disinfecting stations, by means of which the Turkish Empire defends the confines of Europe against the importation of Asiatic epidemic disorders by pilgrims returning from the holy places of Islam. We have recently received an account of the sanitary precautions which were taken in Calcutta at the festival of "Ardhodaya Jog," which was celebrated at the beginning of this month, precautions which show that the Indian authorities are put to no less anxiety from the concourses of the pious than are the sanitarians of Constantinople. We have not yet received advices as to the success of the precautions recently taken in Calcutta, but it is of interest to record them, as they form a noteworthy piece of municipal sanitary organisation which is of good augury for the developing sanitary service of India. In the

first place the railway stations which were used by the pilgrims were liberally supplied with latrine accommodation and filtered drinking water and along the main roads leading to the Khaligat temple filtered water posts were erected every 100 yards and many latrines connected with the adjacent sewers were also constructed. The courtyard of the temple was properly drained and lighted and filtered water was supplied to it. The public hotels and the private lodging-houses for pilgrims were all placed under sanitary inspection and a large extra staff of sanitary workers of various grades was employed, including two special food inspectors who had power to destroy all unwholesome food which they could find. To prevent the outbreak of water-borne disease the use of foul water in the tanks round the temple was prohibited and these were guarded by the police; the water in them was treated with iron sulphate as some precaution in the event of their being used in spite of the order, and one large tank was cleared by running water. Pilgrims were warned by posters and "beat of drum" of the danger incurred by drinking the water of the Tolly's Nullah stream, which is always crowded with country boats on these occasions. Adequate provision was also made for the sickness that must inevitably occur in so huge a concourse as was expected. A dispensary was erected for minor ailments and special hospital accommodation was provided, chiefly with a view to the reception of cases of cholera which were the great dread of those in charge of the sanitary arrangements. Three hospitals with about 400 available beds were prepared for these cases and an ambulance service in connexion with them was provided, in addition to which special provision was made at the Shanagore Burning Ghat for the disposal of the dead. All of these sanitary and medical arrangements were under the charge of Dr. Mullan, health officer of District IV.; the members of the large staff under his control wore distinctive badges according to their grade. We are indebted to Dr. T. F. Pearse, health officer of Calcutta, for this account of the arrangements and we are glad to think that this thorough and well-planned organisation saved the city from such disastrous effects as have in the past followed on vast religious festival gatherings in our Eastern Empire.

THE LIME AND THE LEMON.

THE lemon is a deservedly popular fruit and serves as the foundation of that excellent beverage known as a lemon squash which, perhaps, is the best example of an absolutely non-alcoholic drink. The lime is not so well known, although from the point of view of flavour it is regarded by many as being even superior to the lemon. In view of the fact that there is now a good and abundant supply of limes to this country it is interesting to contrast the analysis of this fruit with that of the lemon. According to an analysis which we have recently made it would appear that the lime, although smaller than the lemon, yields weight for weight a good deal more juice. Thus the average amount of juice expressed from a lemon was 37·50 per cent. of its weight, whereas the lime gave 59·00 per cent. Moreover, the lime gives more citric acid but less sugar, as the following analyses show:—

	The juice of the lemon.		The juice of the lime.	
Total solid matters	8·80	per cent.	8·64	per cent.
Sugar	2·30	,,	0·70	,,
Citric acid	4·57	,,	5·60	,,
Mineral matter	0·35	,,	0·35	,,
Potash	0·15	,,	0·12	,,
Phosphoric acid (soluble) ...	0·010	,,	0·065	,,

The lime therefore yields a "drier" juice and contains a third of the quantity of sugar present in the lemon. The antiscorbutic properties of lime juice may be regarded as more marked than those possessed by the juice of the lemon. While the alkaline salts amount to practically the same in both fruits yet the phosphoric acid is greater in the lime than in the lemon. It is probably owing to the richness in alkaline salts that the use of lemon juice, as well as other fruit juices, is helpful in some diseases of the skin and in preventing eczema. The juice of the lime is equally valuable in this respect if, indeed, in regard to some dietetic points it is not superior. To those who are asked "to think imperially" there is another point about the lime which may appeal to them: it comes from British colonies and not from foreign countries. Fiscal reasons apart, the lime is an excellent and wholesome fruit and it seems a pity that we do not hear as frequently of a "lime squash" as we do of a "lemon squash."

LUNACY IN NEW ZEALAND.

IN his report on the events of the year 1906 Dr. J. F. S. Hay, Inspector-General of Mental Hospitals in New Zealand, states that the number of registered insane persons on Dec. 31st in that year was 3206, including 34 Maoris, of whom 1900 were males and 1306 were females. There are eight mental hospitals in the colony, the largest being the one at Dunedin (Seacliff), with 754 patients Excluding the Maori race, the population of the colony is 888,578, of whom 606,247 are native-born and 282,331 are persons who have gone to the colony from all parts of the world, while the total number of the insane is 3172, of whom 988 are, and 2184 are not, native-born. It will therefore be seen that the native-born constitute more than two-thirds of the population, but furnish less than one-third of the insane. To put it otherwise, though there is one person insane in 280·4 of the total population, among those born in New Zealand there is only 1 in 613·6 and among persons who were born outside the colony 1 in 129·2. Only 34 Maoris were registered as insane; there is no available information as to the incidence of insanity among this section of the population.

CASE OF ANTRAL SUPPURATION PRESENTING UNUSUAL FEATURES.

IN the first issue of the *Royal Dental Hospital Gazette* an interesting case of antral suppuration, in which the symptoms were obscure, is recorded by Mr. J. G. Turner. The patient was a female, aged about 55 years, very neurotic, who complained of severe neuralgic pains of the left side of her face and head of many years' standing—probably 20 at least. Her peculiar mental condition made it impossible to get a history or to trace any coherence in the distribution or occurrence of her pain. One point only stood out—that she always began her tale of woe by reference to the left maxilla. The mouth was edentulous and all that called for note was a slight fulness of the left maxillary tuberosity as compared with the right. There was no tenderness observable. Examination of the nose and antral transillumination were negative; a radiograph showed no sign of teeth. No treatment improved her and eventually it was decided to explore the left tuberosity—influenced by the slight fulness and the persistent reference of pain to that part. On opening into the tuberosity, the crown of a molar tooth was met with and its extraction was followed by a gush of mucopus from the antrum. The roots of the tooth were almost absorbed and the remains of the periodontal membrane were engorged showing that the surrounding bone was inflamed. The patient was greatly relieved but did not make marked improvement until the lapse of three months. The case is of interest on account of the almost entire absence of tangible signs and because the patient's neurotic condition nearly led to a diagnosis of hysteria. Her nose and antrum were examined with negative results and it was

only a strong belief in a "physical basis for pain" which prevented an error in diagnosis. The probable course of events would seem to have been a nasal catarrh spreading into the antrum, into which the roots of the third molar projected, forming among them undrainable pockets; tissue infection spreading to the bone and periodontal membrane; absorption of tooth tissue (as in pyorrhœa alveolaris) and chronic pulpitis. This last would account for the neuralgic pain and the osteitis would account for the after pain. The case would seem to illustrate the importance of noting the smallest sign.

A PENSION FOR MR. J. HALL-EDWARDS.

IT was announced in the House of Commons on Monday last that a Civil List pension had been granted to Mr. J. Hall-Edwards, the well-known worker in x rays, who, as we have already reported, has suffered terribly in the prosecution of his scientific researches. The official pension is £120 per annum but the pension fund is so very small that hardly any larger sum could be expected from this source. The local fund which is being raised for Mr. Hall-Edwards should therefore still be vigorously supported. The treasurer, Mr. F. Marsh, 95, Cornwall-street, Birmingham, will give every information and will acknowledge subscriptions.

THE BACTERIOLOGY OF NOMA.

THE pathology of noma has been studied within recent years by many observers but at the present time there is considerable difference of opinion on the subject. Dr. E. Hellesen of Christiania has published a paper in the *Jahrbuch für Kinderheilkunde* for March in which he discusses the views put forward by other observers and records his own exhaustive observations on a fatal case of the disease. The commonly received explanation of noma is that it is a non-specific gangrene associated with debilitating or exhausting conditions, while some authorities postulate some disturbance of the innervation of the parts affected as a predisposing cause. Within the last few years a considerable number of observations have been carried out with the object of discovering some pathogenic organism or organisms in this condition. As Dr. Hellesen points out, the difficulties in the way of such researches are very considerable owing to the fact that the gangrenous tissues offer a very favourable culture medium for the growth of many organisms which may reach them from the mouth or from the air. It is not surprising therefore that the results hitherto obtained have not been concordant. In 1890 Grawitz observed numerous bacilli in sections made from the necrotic tissues of a case of noma; it was at first thought that these were identical with a bacillus necroseos which produces necrotic and diphtheroid processes in several of the domestic animals, but subsequent observations have failed to confirm this view. A fusiform bacillus like that found in Vincent's angina has been discovered in cases of noma, either alone or in association with other organisms, by numerous observers. In a similar manner the diphtheria bacillus has been found not infrequently in cases of gangrenous stomatitis and vulvitis, sometimes associated with other bacilli. Various pyogenic organisms have also been found in cases of this disease and it has been suggested by Comba that the gangrene is not the result of the action of any specific organisms but that it may result from the presence of any pyogenic agent when its virulence is enhanced by the simultaneous growth of symbiotic organisms. A similar conclusion has been arrived at by Durante, who found staphylococcus pyogenes aureus with bacillus proteus vulgaris in a case of noma, and by Ravenna, who found the staphylococcus and the typhoid bacillus in another case. Dr. Hellesen quotes several other observers who have described organisms in this disease, the nature of which it is difficult to determine exactly; these comprise cocci and bacilli, both Gram-positive and Gram-negative, some of which appeared to be capable of producing necrotic processes in animals. Dr. Hellesen investigated the case alluded to above with great care by means of cultures made from the necrotic tissues, inoculation experiments both with these cultures and with the necrotic tissue, and microscopical examination of sections of the latter. The patient was a boy, aged three and a half years, who suffered from measles in the month of May, 1905, but recovered completely. In August of the same year he developed some swelling of the right cheek which increased, causing considerable swelling of the side of the face, some fever, and great pain. After a few days ulceration commenced on the inner side of the cheek, associated with intense fœtor. The urine contained neither albumin nor sugar. The general condition of the child was good and he was well nourished. The cheek became gangrenous and the process spread to the gums. Death occurred about three weeks from the commencement of the process. Cover-glass preparations made from the gangrenous tissue showed numerous cocci, including diplococci and short rods, and a few fusiform bacilli and spirilla. Plate cultures were made, with the result that the cocci proved to be staphylococci and streptococci of ordinary characters. The bacilli were short and were decolourised by Gram's method but were not further investigated. The diplococci were isolated and their cultural and tinctorial characters were carefully investigated. They resembled the pneumococcus in shape and size but did not possess any capsule. They stained well with the ordinary aniline stains and also by Gram's method. They rendered bouillon turbid and in 24 hours produced an acid reaction in it. Upon agar slopes they produced punctate, whitish-grey, translucent colonies in 24 hours. They coagulated milk in 24 hours and here again developed an acid reaction. They grew well in grape-sugar agar without forming gas. Cultures made from the blood both before and after death yielded diplococci identical in character and no other organism. The same diplococcus was invariably found in sections made from the affected tissues, not only in the necrotic areas but also in the area of infiltration around them and even in the apparently healthy tissue adjacent. On inoculation into animals a typical and apparently a specific necrosis was produced both by means of the gangrenous tissue and the cultures of diplococci. In these experiments the diplococci could be recovered from the necrotic areas and from the blood. The virulence of the organism became weakened if repeatedly transferred to fresh bouillon; on the other hand, growth with other organisms rendered it more active. Dr. Hellesen concludes that the diplococcus isolated by him was the pathogenic agent in the case under his care but is of opinion that the view expressed by other observers that noma is not a specific process and is not always produced by the same organism is most probably correct. This paper is one of great value, not only from the thorough way in which he investigated his case but also from the interesting *résumé* which he has given of previous observations on the subject.

THE UNIVERSITY OF LONDON UNION SOCIETY.

THE friends of the University of London both before and since its reconstitution have always felt that if it is to attain a proper solidarity and to lay the foundation of a "tradition," which, in the nature of things, none but its future generations can hope to feel as a guiding force, advances must be made along other lines than the purely academic. A community of social interests must be fostered which will afford opportunity of good-fellowship amongst its scattered members, such as is not to be found in lecture-room or examination hall. That such a spirit is stirring is evident from the report for 1907 of the University of London

Union Society, which was constituted a year ago "to hold debates and to promote social intercourse amongst students and members of the University." Its officers, who have worked hard to give it a successful start, have, we are informed, modelled it on the lines of the unions existing at Oxford and Cambridge, and in this work they have received the sympathetic support of their Convocation. The secretary has also visited Lille to observe the arrangement and details of the building which is devoted to the Students' Union of that University, for it is hoped that the London society will soon have a house of its own. Meanwhile half a dozen debates have been held by the hospitality of various constituent colleges, but we note that only one member of the medical faculty, a lady, has represented the rhetorical force that lies latent in it; in fact, speaking generally, the medical faculty is poorly represented. A little argument on political or social problems is an excellent corrective for a surfeit of "shop," and young men will find the training of declaring their convictions before a not too lenient audience an admirable one in many ways. All members and recognised teachers of the University are eligible for membership on an annual payment of 5*s*., and regular students of any school of the University can be made associate members at the discretion of the committee. It is intended to invite distinguished persons to open debates from time to time. We shall watch the career of the union with interest.

CONDITION OF THE EYES IN MEN OVER 60 YEARS OF AGE.

A VALUABLE statistical inquiry into the refraction and some pathological conditions of the eyes of 500 men above 60 years of age has been recently conducted by Dr. D. W. Greene of Dayton, Ohio, and has been published in the January number of *Ophthalmology*. The subjects of the examination were inmates of the National Military Home near Dayton who had been drawn from the middle and lower labouring classes. Blood pressure was taken with the Janeway sphygmomanometer and 130 mm. Hg was taken as the normal standard, but 112 men gave a reading of 145 mm. Hg and under, and 438 above that pressure. Dr. Greene found that arterio-sclerosis was of frequent occurrence. As to the nationality of the 500 men it was found that 328 were Americans, 59 were Germans, 85 were Irish, 12 were English, and 6 were not recorded; one was a Swiss, one a Swede, one an Austrian, two were French, four were Canadians, and one was a Welshman. 290 men presented cataract in some stage of development and of these 187 were Americans, 35 were Germans, and 52 were Irish; a few escaped registration in regard to their nationality. The average age of the 500 men was 70·76 years. In regard to occupation, 371 had followed hard and laborious callings, such as farmers and day labourers, and of these the majority had a blood pressure of from 160 to 280 mm. Hg; 142 had followed less laborious callings, such as those of clerk and bookkeeper, and in these the blood pressure was as a rule much lower. Drinking habits were inquired into in nearly every case; 89 claimed to be temperate, 86 were regular drinkers, 45 drank periodically, 240 claimed to be moderate drinkers, and the habits of a few were not noted. The examination of the blood pressure charts showed that the influence of alcoholic drinks in the causation of arterial disease has probably been over-estimated, and that as an etiological factor it does not compare with tobacco when used to excess. In regard to specific history 34 men admitted the disease and 420 denied it; no record was obtained in 26. In the majority of those who had had syphilis the blood pressure was above the normal, some considerably above it. Of 910 eyes, not men, conforming to the requirements of the examination 529 had some kind or degree of lens opacity. Of some of these he had no satisfactory record, so that the ratios are on a basis of 504 eyes. Of these 50 were classed as mature cataracts, 102 as incipient cortico-nuclear, 255 as incipient cortical, 84 as incipient nuclear, seven as post-polar, four as capsular, and two as traumatic. The eyes with incipient cortical cataract had an average age of 69·4 years, ranging from 60 to 95. The blood pressure in 5·9 per cent. was below the normal, the average being 117·7 mm. Hg. In 31·8 per cent. the blood pressure was between 130 and 160 mm. Hg, and the average age was 67·8 years. In 62·3 per cent the blood pressure was over 160, the average being 177 5 mm. Hg. Similar observations which must have taken up much time and demanded much attention and care are given for each of the other forms of opacity of the lens. In regard to the colour of the irides 3 per cent. had black eyes, 34·6 per cent. had blue eyes, 30·1 per cent. grey eyes, 19·2 per cent. hazel eyes, and 13 per cent. brown eyes. The average pupillary distance was found to be 6·2 centimetres (about $2\frac{7}{8}$ inches). The transverse diameter of the cornea was 12 millimetres. The average size of the pupil was 3·3 millimetres. Two or three drops of a 1 per cent. solution of homatropine usually doubled the diameter of the pupil in men between 60 and 70 years, but after 70 the pinhead pupil so often seen will not generally enlarge quite so freely. No case of glaucoma resulted from the use of the mydriatic.

THE UNITED KINGDOM HOSPITALS CONFERENCE.

THIS conference will be held on Wednesday and Thursday next, April 1st and 2nd, at University College, Gower-street, London, W.C. The first session will take place on Wednesday afternoon at 2 P.M., when after the appointment of a chairman and other formal business the members of the conference will discuss the questions of payments to the hospitals by hospital patients; of the prevention of hospital abuse by the employment of almoners and by the coöperation of provident dispensaries and similar institutions with hospitals; and the methods of election of the honorary hospital staffs. The Hon. Sydney Holland, chairman of the London Hospital, Colonel Montefiore of the Charity Organisation Society, and Mr. H. A. Harben, treasurer of St. Mary's Hospital, will speak to motions on these subjects if hospital representatives show a desire to raise specific points. On Thursday the conference will meet for its morning session at 10.30 A.M. when the subjects set down for discussion are the organisation of county guilds for assistance in hospital work, and the desirability of a uniform method of keeping hospital accounts. At the afternoon session the subjects set down are the advisability of the notification of pulmonary tuberculosis and the provision of isolation hospitals for such cases; the desirability of medical men having more voice in nominating representatives for election to hospital boards of management; and the question of provision of temporary accommodation in hospitals for mental cases. This is the third conference and it is hoped that they will be annual events.

PULMONARY EMBOLISM FOLLOWING AN OPERATION.

IN the *Boston Medical and Surgical Journal* of Feb. 27th Dr. C. G. Cumston has reported a case of a rare but disastrous sequel of operation—pulmonary embolism. A single woman, aged 29 years, came under observation. Menstruation had been regular until the age of 23 years, when the amount of blood lost began to increase and she complained of pain in the back and left side. At the age of 27 years menstruation became irregular, occurring at intervals of three, five, or six weeks. She was strong and well developed. In the left side of the abdomen was a

tumour of about the size of the fœtal head, very moveable and fluctuating. A diagnosis of ovarian cyst was made and was confirmed on operation. The cyst had a long narrow pedicle but was free from adhesions. It was easily drawn outside the abdomen after puncture and the pedicle was ligatured with kangaroo tendon. The operation lasted 20 minutes and recovery was uneventful. At no time did the pulse rise above 80 or the temperature above normal. She was allowed to sit up on the twelfth day. On the twentieth day after operation, after being dressed and seated in a chair, she suddenly developed dyspnœa without any warning. She became cyanotic and unconscious and the pulse became so small that it could not be counted and she died in ten minutes. At the necropsy the peritoneum was found to be perfectly normal; the omentum was slightly adherent to the abdominal incision. The stump of the pedicle was in perfect condition. The diaphragm was high on both sides, reaching the lower border of the fourth ribs. The right lung was contracted and at the junction of the middle with the lower lobe showed a dark subpleural discolouration. On section the lung was found still to contain air, to be of a brownish-red hue, and to contain a little blood. A large branch of the pulmonary artery supplying the lower portion of the lung contained fresh brownish thrombi slightly adherent to the vessel walls. Corresponding to the discolouration described was a black focus of about the size of a hen's egg. The left lung was similar to the right; it was somewhat collapsed and of a dark brownish-red hue. The large branches of the pulmonary artery were thrombosed. The heart was somewhat enlarged and the muscle was soft and reddish-yellow.

THE SIXTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

THE Sixteenth International Congress of Medicine will be held at Budapest from August 29th to Sept. 4th, 1909, under the august patronage of H.I.M. Francis Joseph, Emperor of Austria. The President of the Congress will be Professor C. Müller and the Secretary-General Dr. Emil Grósz. The president of the national committee for Great Britain is Dr. F. W. Pavy, and the secretary Mr. D'Arcy Power. The work will be carried out in 21 sections, with one subsection (of orthopædics), each with its own president and secretary, and although an elaborate provisional programme of proceedings has been issued already, offers from medical men to contribute papers are now being solicited by circular; we do not find many British names in the preliminary list. At both plenary and sectional sittings the English, French, German, or Italian language may be employed. The full programme of the papers to be read will be published by the end of the present year, and manuscripts of such papers, which must be clearly written, are to be sent to the Bureau du XVI^e^ Congrès International de Médecine, Esterházy-utcza 7, Budapest VIII., Hungary, by Jan. 31st, 1909, at the latest, so that members of the sections may receive printed copies before the Congress opens. The time for reading each paper is limited to 20 minutes. Discussion is limited to ten minutes for each speaker. The subscription for each member is 25 crowns (£1), which will entitle him to take part in the business of any section and to receive the literature of the section to which he has attached himself. Facilities for reduced fares will be obtained from the principal railways concerned. Wives and daughters of members will have similar advantages on a payment of half the subscription for each. Subscriptions are to be sent to the treasurer of the Congress (M. le Trésorier du XVI^e^ Congrès International de Médecine, Esterházy-utcza 7, Budapest VIII.), with an intimation as to the section to which the member wishes to be attached. Intending members are asked to send at the same time a card on which the applicant's position and full private address are legibly inscribed. Subsequent changes of address should be notified without delay. All further information can be obtained from the general secretary at the Bureau of the Congress.

THE TREATMENT OF CHRONIC ULCER OF THE LEG.

ABOUT 20 years ago Professor Unna of Hamburg devised a method of treating ulcers of the leg which proved very successful in his hands and has quite recently been strongly recommended by Dr. H. Hecker of Strassburg in an address delivered at a meeting of the Medical Society of Lower Alsace. The principal feature of the treatment is the use of an adhesive zinc dressing (*Zinkleimverband*), and full details relating to it were given by Dr. Hecker in his address which has been published in the *Strassburger Medizinische Zeitung* (No. 2, 1908). The basis of the dressing is formed by mixing gradually in a water-bath with constant stirring 40 grammes of glycerine, 40 grammes of water, 10 grammes of gelatin in small pieces, and 10 grammes of oxide of zinc. This mixture solidifies on cooling; it may be kept for any length of time in a tin box and is liquefied by warming when required. Bandages moistened with solutions of antiseptics such as lysol or chinosol are first of all applied to the ulcer in order to cleanse it and to reduce the irritability of the surrounding parts. The skin of the whole leg is then thoroughly cleansed with soap and water, shaved, and freed from greasiness by means of ether, so that the dressing may adhere readily to it. The skin of the whole leg is next brushed over with the above-mentioned warm mixture applied with a stout hair pencil, after which the ulcer is covered with antiseptic powder to such a depth that the surface is no longer visible. A variety of powders may be used for this purpose, airol being the one preferred by Dr. Hecker. When the ulcer has received its coating of powder it is covered with a layer of wadding free from grease and overlapping the edges of the ulcer in all directions for a distance of two or three centimetres. The interposition of protective silk or guttapercha tissue between the ulcer and the wadding is unnecessary and has the disadvantage of preventing the absorption of the discharge by the wadding. The parts of the foot and leg where the bandage exerts most pressure are also protected with wadding. For bandaging the limb two starched gauze bandages are required, each ten centimetres wide and ten metres long and rolled in two halves from each end to the middle. The bandages having been wetted with water and well squeezed out the foot is bandaged from the ankle to the toes, which are left uncovered, and the process is continued in the reverse direction, each turn overlapping half of the previous one, until it comes to a hand's breadth below the knee. The second bandage is then applied in exactly the same way over the first one. The size of the ulcer makes no difference in the treatment. Even the largest ones, almost quite surrounding the leg, can be made to heal by this simple means. The leg must now be kept in the horizontal position either exposed to the heat of the sun or near a stove; it must not be covered with stocking, trousers, or bedclothes until the bandage is quite hard. The dressings are not usually changed until after the lapse of three weeks. This may be necessary at an earlier date if the discharge is so profuse as to soak through the bandage, but if the discharge is scanty the whole may be left undisturbed for four weeks. The bandage is best slit up with shears but it may also be unwound after wetting with warm water. In changing the dressings the ulcer must not be left uncovered long enough to become dry. One advantage of this treatment is that the patients may walk about and follow their usual occupations during the whole course of it. The resulting scar is of firm consistence and far more

durable than one obtained by any other system of treatment. It is advisable that the patient should always wear a knitted stocking bandage (*Trikot-Schlauchbinde*). At the same meeting of the society a second paper on this method of treating ulcers was read by Dr. Faullimmel of the district hospital at Bischweiler. He said that he had many cases of ulcer of the leg under his care, and after trying a variety of methods of treatment he had found Professor Unna's to be by far the most successful, economical, and convenient.

THE FORMATION OF LACTIC ACID AND CARBONIC ACID DURING MUSCULAR CONTRACTION AND RIGOR MORTIS.

THE *Cambridge University Reporter* of March 17th contains an interesting communication from Dr. P. W. Latham on the above subject. He points out that by combining prussic acid with pyruvic acid (acetyl formic acid formed by the dry distillation of tartaric acid) and subsequent hydrolysis methyl-tartronic acid is produced. This acid on decomposition resolves exactly into lactic acid and carbonic acid. Dr. Latham suggests that the nitrile of methyl-tartronic acid which by hydrolysis is resolved into carbonic acid and ammonia formed one of the constituents of proteid matter and that during muscular contraction the ammonia group combined with other constituents, the lactic acid and carbonic acid being alone set free. Some support is given to this view from the fact that in the earlier stages in the genesis of organic matter in plants the nitrile of methyl-tartronic acid can be formed from acetic anhydride and prussic acid. Schutzenberger in his experiments on the decomposition of albumin obtained among other products an isomeride of aspartic acid which differed from it, however, by being highly soluble in water. The suggestion now is that this body was iso-aspartic acid originating from the nitrile of methyl-tartronic acid. Another substance obtained by Schutzenberger was probably a compound of glycocoll and iso-aspartic acid. The conclusion is that these two substances being derived respectively from amino-malonic nitrile and methyl-tartronic nitrile may be regarded as constituents of the living protein molecule.

INFANTILE MORTALITY AT GRIMSBY.

Dr. W. B. Simpson, the medical officer of health of Grimsby, has prepared a careful report for the instruction of his fellow townsmen upon the subject of infantile mortality, wherein he lays stress upon the municipal responsibility for checking the wastage of human life. The total death-rate of infants under 12 months is still as high as 176 per 1000, and the report suggests certain conclusions, having regard to the admitted facts that a high infantile mortality is a feature common to the majority of our large provincial towns, and that those towns having a large proportion of women working in factories are prone to suffer most severely. Dr. Simpson considers that infantile mortality in the borough of Grimsby is excessively, if not abnormally, high, and alludes to the fact that the total of infantile mortality in Grimsby is largely augmented by the excessive prevalence of diarrhœal diseases. He goes on to point out that diarrhœa is a "filth" disease, is infective, and is associated with decomposing organic material, adding that its incidence coincides with the "swarming" of the housefly, and that dust particles and houseflies probably act as carriers of infective material. He considers that the system of dealing with excremental material in the borough is defective and lends itself to the ready conveyance of infective material into the food of infants, and suggests the following means to remedy this unfortunate state of affairs: the adoption of the Notification of Births Act, 1907; the appointment of a lady health visitor; the training of all elder girls in elementary schools; the establishment of a model crèche school; the replacement of all box privies by water closets; and more frequent removal of all refuse from the vicinity of dwellings, especially during the autumn months, urging that accumulations of decomposing organic refuse in the vicinity of dwellings are at all times a menace to health, and especially so in the case of infants. We thoroughly believe in the efficacy of taking the public into the confidence of the medical officer in dealing with such matters as infantile mortality, and Dr. Simpson may rely on receiving general support for his views. We think it would have been well, however, if he had not pressed the virtues of the Notification of Births Act without allusion to its obvious unfairness to the medical profession.

AT a quarterly meeting of the board of management of St. Mary's Hospital held on March 19th the following motion was moved from the chair and carried unanimously:—

That the best thanks of this board be given to Dr. Robert Henry Scanes Spicer for the valuable service he has rendered to the hospital for the past 20 years as surgeon for diseases of the throat and that he be, and is hereby elected, honorary consulting surgeon for diseases of the throat.

THE Department of Public Health of Queensland in a bulletin dated Feb. 15th states that no case of plague has been notified at Brisbane during the week ending on that date. The last case notified occurred on Feb. 7th. During the week ending March 21st the Acting Governor of the Gold Coast has reported five deaths from plague at Accra, two at Cape Coast, and three near Oblogo. All other localities are free from plague.

A VERY successful meeting of the Medico-Legal Society was held on Tuesday last, March 24th, when Mr. R. Henslowe Wellington continued the adjourned debate upon Death under Anæsthetics in a paper raising the question of the legal liability of the anæsthetist in case of catastrophe. An interesting debate followed and over 80 members were present.

THE death of Dr. Robert Barnes, which was followed at so short an interval by the death of his son, Dr. R. S. Fancourt Barnes, left vacant two posts as consulting physicians to the Royal Maternity Charity of London. Dr. Henry Gervis and Dr. George Ernest Herman have been unanimously elected by the committee to fill the vacant posts.

Dr. Philip Crampton Walker of Pretoria and formerly of Liverpool has since Feb. 10th been discharging the duties of medical officer of health of the Transvaal Colony in place of Dr. George Turner who has retired, and Dr. Walker will continue to do so until further official notice.

Looking Back.

FROM

THE LANCET, *SATURDAY*, March 27th, 1830.

MEDICAL INSPECTION.

WE understand that a medical inspection is now in progress at all the depôt stations throughout England, for the purpose of ascertaining the actual efficiency of the men, and in order that such may be discharged, particularly those for limited services, who shall be reported to be, either from old age or disability, unfit for active duty. The stations north of London, as far as Fort George in Scotland, have been entrusted to Staff-Surgeon Henry Marshall, accompanied by Colonel M'Grigor; those to the south of London, to Staff-Surgeon Sir Andrew Halliday, M.D.

THE METHOD OF PREPARING "NEW TUBERCULIN" (TUBERCULIN T.R.): A CORRECTION.

BY PROFESSOR W. G. RUPPEL.[1]

(*Translated for* THE LANCET.)

IN his well-known article entitled "New Tuberculin Preparations" which appeared in No. 14 of the *Deutsche Medizinische Wochenschrift* in the year 1897, Professor Robert Koch referred to the endeavours which had been made to discover a specific remedy for tuberculosis and discussed his reasons for believing that the discovery of tuberculin did not mark the final limit of these endeavours. In tuberculin Koch had found a substance which on the one hand enabled tuberculosis to be diagnosed with certainty even in the earliest stages of the disease, and on the other hand exercised a perceptible influence on tuberculous processes. The therapeutic value of tuberculin was at the same time practically established. The only obstacle to the general employment of tuberculin as a remedy was the frequent occurrence of violent reactions. Koch's efforts were therefore directed to the preparation of substances which would possess the immunising and curative properties of tuberculin but would not set up an intense general reaction in tuberculous subjects inoculated with them. Such substances, he thought, must be looked for in the material of which the tubercle bacillus is composed.

Many attempts to immunise animals with the help of dead tubercle bacilli led to no satisfactory result. This failure was attributed to the fact that dead tubercle bacilli injected subcutaneously were not properly absorbed by the deep layers of the skin but gave rise to the formation of abscesses. When injected into the veins, however, the dead bacilli were deposited in the lungs where they brought about pathological changes exactly similar to those produced by bacilli which were alive and capable of propagation; these changes were therefore genuine pulmonary tubercles. This being so it became necessary to convert the tubercle bacilli into a form in which they would be absorbed. In this process chemical agents had to be avoided, because there was reason to fear that they would have an injurious effect on the immunising substances of the tubercle bacilli. After many experiments Koch by means of a purely mechanical method succeeded in breaking up the bacilli and converting them into a form capable of absorption. For this purpose they were strongly dried and rubbed in an agate mortar into a powder so fine that entire tubercle bacilli capable of characteristic staining could no longer be seen in it under the microscope. By extraction with distilled water all the soluble matter could be removed from the tubercle bacilli which had been rubbed in the mortar, and the resulting solution when freed from the insoluble residue by centrifugalising is a slightly opalescent but quite clear fluid. Koch denoted it by the initials T.O. It contains the toxic constituents of the tubercle bacilli. Its action upon tuberculous patients and animals is analogous to the action of the old tuberculin. Admixture of an equal amount of glycerine with T.O. does not throw down a precipitate, showing that T.O., like old tuberculin, contains such portions of the tubercle bacilli as are soluble in glycerine.

The whole of the insoluble residue which has been freed from T.O. by centrifugalising can by appropriate treatment, many times repeated, be converted into a series of solutions. This treatment consists in successively drying the substance thoroughly, rubbing it in a mortar, extracting with water, and centrifugalising. These solutions may be regarded as possessing identical properties. Unlike T.O., they contain substances which are precipitable by 50 per cent. glycerine and which produce only a small toxic effect on tuberculous individuals. These solutions are called by Koch the residual portion of the tubercle bacilli (*Tuberkelbazillenrückstand*) and are denoted by the abbreviation T.R. The whole of the immunising substances present in the tubercle bacilli are contained in these solutions in a form perfectly capable of absorption by the organism.

In the above-quoted article Koch draws attention to the difficulties and dangers associated with the working up of tubercle bacilli in the preparation of T.O. and T.R., and mentions that for this purpose it is necessary to have such mechanical appliances as are only used in a factory. He has therefore intrusted the manufacture of these preparations to the firm known as the Farbwerke vorm. Meister, Lucius, and Brüning in Höchst on the Main. Since the year 1897 these preparations have been manufactured in the bacteriological department of this establishment, where Koch's directions are most carefully observed.

In a particular instance the process of manufacture is as follows. One gramme of strongly dried tubercle bacilli is pulverised in a suitable apparatus until entire tubercle bacilli are no longer recognisable in a sample. The pulverised mass is then treated with 100 cubic centimetres of sterile distilled water and centrifugalised. The result of this operation is a fluid which is called T.O. and an insoluble residue which is called T.R.I. The latter is now strongly dried, pulverised, treated with water, and centrifugalised, yielding for the second time a solution and a solid residue. The residue is again dried, pulverised, treated with water, and centrifugalised. It is found that by two or three repetitions of this process the whole of the insoluble residue T.R.I. originally obtained on the removal of the T.O. can be converted into a series of solutions without any insoluble matter remaining at last except accidental mechanical impurities. All these solutions are now combined. In the successive conversion of the T.R.I. into a series of solutions care must be taken that the total volume of the combined fluids shall be less than 100 cubic centimetres. The amount of solid substance present in it is ascertained by submitting a small portion (five cubic centimetres) to a dry process—namely, evaporation *in vacuo* and weighing. To the rest of the fluid there are now added a little glycerine and formaldehyde and finally a sufficiency of water to make one cubic centimetre contain exactly 0·002 gramme of dry residue. The T.R. is now quite ready. For the preparation of tuberculin T.R. we always make use of the same culture which is grown upon a special nutrient medium of constant composition. Commencing in this way the preparation of the tuberculin T.R. proceeds quite uniformly, so that approximately 100 cubic centimetres of T.R. are always obtained from one gramme of dried tubercle bacilli. These 100 cubic centimetres of T.R. therefore contain according to Koch's view the immunising substance of one gramme of dried bacilli. One cubic centimetre of T.R. therefore corresponds to 10 milligrammes of dried bacilli, but 100 cubic centimetres of T.R. in reality contain only 0·2 gramme of dry constituent and one cubic centimetre therefore contains only 0·002 gramme, or two milligrammes of dry constituent.

In his above-quoted article Koch gives the following detailed instructions for the clinical use of T.R.:—

> The fluid contains 10 milligrammes of solids per cubic centimetre (*1m ccm 10 mg fester Substanz*) and for use it must be brought to the required dose by dilution with physiological solution of common salt, not with carbolic acid solution. A beginning is made with $\frac{1}{10}$th of a milligramme.

From the above full description of the method of preparation it follows that Koch's expression, "the fluid contains 10 milligrammes of solids per cubic centimetre," must be understood to mean "one cubic centimetre contains the active or immunising substance of 10 milligrammes of dried tubercle bacilli." Consequently in beginning a course of tuberculin treatment with an initial dose of T.R., which, as Koch's directions require, corresponds to $\frac{1}{100}$th of a milligramme of tubercle bacilli, it is necessary to dilute the T.R. to such an extent that the operator may inject $\frac{1}{5000}$th (0·0002) of a cubic centimetre of the original fluid.

Practical experience has shown that dilution is best effected with a 20 per cent. solution of glycerine. With this there is no fear of precipitating the solid constituents of the T.R. because it has been stated above that they are not precipitated until the addition amounts to 50 per cent. of glycerine. This solution, hereinafter called glycerine water, is prepared by mixing 20 cubic centimetres of pure glycerine with 80 cubic centimetres of distilled water and boiling for 20 minutes. The fluid must be quite cold when used. The operator takes 0·3 cubic centimetre of tuberculin T.R. from an original bottle with a pipette divided into tenths of a cubic centimetre and adds to it 2·7 cubic centimetres of glycerine water. This gives a dilution of 10 per cent. strength (*eine 10 procentige Verdünnung*). Of this fluid 0·1 cubic centimetre is added to 9·0 cubic centimetres of glycerine water. This gives a thousandfold dilution, and of this 0·2 cubic centimetre or two divisions of a Koch syringe

[1] From the Bacteriological Department of the Farbwerke at Höchst am Main.

or a Pravaz syringe contain $\frac{1}{5000}$th (0·0002) of a cubic centimetre, which is the initial dose required.

We have felt ourselves compelled to discuss these proportions somewhat fully because experience shows that erroneous views are held regarding the preparation and dose of T.R., and especially regarding the quantity of solid substance contained in one cubic centimetre of this preparation. For instance, on p. 1218 of THE LANCET of Nov. 2nd, 1907, in a paper entitled "Studies in Connexion with Therapeutic Immunisation," Sir A. E. Wright says:—

> Owing to the fact that the quantum of dry tubercle powder in Koch's T.R. (tuberculin) was, owing to an unaccountable error on the makers' part, declared by them as 10 milligrammes in one cubic centimetre, when it was in reality, as they now inform me, only 2 milligrammes in one cubic centimetre, the dose here inoculated would in reality be only $\frac{1}{2500}$th milligramme. A similar correction would, be it noted, be applicable to the doses of tuberculin as stated in this paper and in all my previous publications.

The practical application of tuberculin T.R. in clinical work has produced excellent results, as has been unanimously declared by a variety of authorities. For the treatment of patients it was of very little consequence to know the real amount of dry substance which the preparation contains, provided that the selection of the dose, and above all things the increase of the dose, was rightly undertaken. There was certainly no mistake on the part of the manufacturers of the preparation. From the earliest beginning to the present day the preparation has always been supplied in the same degree of concentration and consequently possessed of the same degree of activity. We believe that in the present article we have cleared up all the doubts and errors which exist, and we hope that the preparation of dilutions of tuberculin T.R. will not in future present any difficulty.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the President and general council of King Edward's Hospital Fund for London to receive the accounts and the report of the general council for the year 1907 was held at Marlborough House on March 20th, His Royal Highness the Prince of Wales, the President of the Fund, being in the chair.

The PRINCE of WALES moved the adoption of the balance sheet, which was presented by Lord Rothschild, the honorary treasurer of the Fund.

Lord STRATHCONA seconded and the motion was carried unanimously.

Sir SAVILE CROSSLEY then read the draft report of the Council for the year 1907 which stated that the total receipts for the year amounted to £484,069 10*s.* 9*d.* This sum was made up as follows: donations, £5656 2*s.* 5*d.*; contributions to capital, £517 14*s.*; special donation, £100,000; annual subscriptions, £25,412 4*s.* 10*d.*; contribution of the League of Mercy, £18,000; from the Lewis estate, £212,500; legacies, £69,472 12*s.* 3*d.*; interest from investments, £51,260 17*s.* 3*d.*; together with £1000 from the trustees of the London Parochial Charities and £250 from the trustees of the Bawden Fund. The amount distributed was £121,000, including the £1000 entrusted to the Fund for distribution among convalescent homes by the London Parochial Charities. In addition to this, amalgamation grants of £2750 became due during the year and were paid. Since the inauguration of the Fund the amount spent on administration had been £1 5*s.* 8*d.* per cent. of the total amount received. During the year the sum of £212,500 was received from the executors of the will of the late Mr. Samuel Lewis on account of the legacy of £250,000 left to the Fund. The legacies from the late Mr. Alfred Beit of £20,000, the late Mr. John Nicholas of £10,000, and the late Lord Grimthorpe of £5000 (less duty) announced in 1906 were received, while a sum of £15,000 was received on account of the residue of the estate of the late Lieutenant-General G. E. Baynes, and a further sum of £10,932 on account of the residue of the estate of the late Mr. G. H. Heigham. The Fund had also to acknowledge the munificent donation of £100,000 from Mr. Andrew Carnegie. The amounts received in donations and subscriptions, excluding Mr. Carnegie's gift, showed, as compared with 1906, an increase of £1165 4*s.* 5*d.* The Drapers' Company had generously increased their annual subscription from £1500 to £3000. The League of Mercy had contributed £18,000, being the same amount as in the previous year. During the nine years of its existence the League had furnished in all £97,000 to the Fund. Every eligible hospital which had applied for a grant had been inspected and reported upon. On July 26th, 1907, the Bill for the incorporation of the Fund became law, and on the same day a meeting of the President and General Council was held at which all the committees were reappointed, and the same powers as they previously exercised, in so far as these powers were not inconsistent with the Act, were delegated to them. The Council states that the Act has appeared to work satisfactorily in every way. In February, 1907, a committee, consisting of Sir Eyre Massey Shaw and Captain Wells, was appointed to inquire into the best means of assisting the various hospitals to secure a greater degree of protection against fire, and in July they issued a report containing suggestions which had been circulated to the hospitals. A committee, consisting of the Presidents of the Royal Colleges of Physicians and Surgeons, together with Sir William Church and Sir Cooper Perry, had been appointed to revise the form of report supplied to the visitors to hospitals and that committee had improved this form and brought it up to date. During the year the Royal National Orthopædic Hospital took over the patients and some of the members of the staff and governing body of the City Orthopædic Hospital, and this amalgamation was now complete. The efforts to amalgamate the five throat, nose, and ear hospitals still continued, but the difficulties of negotiating with so many bodies is necessarily great and it has not been found possible yet to arrive at any definite conclusion. In connexion with the proposed amalgamation between the North-West London Hospital and the Hampstead General Hospital the Fund had made an offer with a view to the first-named institution being converted into an out-patient department in connexion with the Hampstead General Hospital.

The PRINCE of WALES, in moving the adoption of the report, said:—My Lords and Gentlemen,—The draft report which has just been read shows that the Fund has had a busy year. ..... Since our council meeting in December, acting on the advice of the Executive Committee, and in accordance with the powers given under the Act, I have decided to appoint a committee to inquire into the system prevailing in the London voluntary hospitals regarding the admission of out-patients. It is to be hoped that the labour involved in the holding of such an inquiry may perhaps, to some extent, be lightened by the results of the work of the Royal Commission on the Poor Laws, the issue of whose report we look forward to with great interest. In so far as the Commission may deal with certain aspects of the question of medical relief we cannot fail to profit by a perusal of the evidence given before them, and of the conclusions at which they arrive. We shall, therefore, defer our inquiry until the Commission has reported. Another matter to be brought to your notice is a development of the scope of the operations of the Fund which I have approved upon the recommendation of the distribution committee. Hitherto the hospitals with which we have dealt have been those lying in the County of London, or within seven miles of Charing Cross. This limitation was wisely imposed when the Fund was instuted in 1897. But in the 11 years which have since elapsed London has grown rapidly and it is felt that the time has come when we should enlarge our area. The radius from Charing Cross has, therefore, been extended from seven to nine miles. We also propose this year to consider the claims of consumption sanatoria in the country which take a large proportion of their patients from London. It must be obvious that such institutions are better situated in the country than in London or even in the suburbs. ..... The total of last year's distribution exceeded the income from investments by £70,000. With the extended area an increased income from subscriptions and donations will be necessary, and I trust that the public will recognise this and continue to give us their substantial support. ..... I now move the adoption of the report.

The motion was seconded by the Lord Mayor (Sir JOHN BELL), supported by the Chairman of the London County Council (Mr. R. A. ROBINSON), and by Lord BESSBOROUGH, chairman of the Executive Committee, and carried unanimously.

The Bishop of SOUTHWARK moved, and Lord REVELSTOKE seconded, a vote of thanks to the Prince of Wales for presiding. The vote being carried by acclamation,

His Royal Highness said: My Lords and Gentlemen,—I

thank you for your kind vote of thanks which you have so cordially received. I am indeed gratified at the present most satisfactory state of the Fund. These excellent results are due to the many good friends who support me and who carry out the hard work—and it is very hard work—of administering this large sum of money. It is impossible for me to express sufficiently my gratitude to them for all they do in helping the Fund.

The proceedings then closed.

LYNN THOMAS AND SKYRME FUND.

THE following list of subscriptions (up to March 20th) has been received from Mr. William Sheen, 2, St. Andrew's Crescent, Cardiff, who is acting as secretary to the Fund:—

Subscribers of Ten Guineas.

Sir Charles B. Ball, Dublin.
George Lenthal Cheatle, C.B., London.
W. T. Edwards, Cardiff.
W. Lloyd Edwards, Barry, Glam.
A. Pearce Gould, London.
W. Arbuthnot Lane, London.
G. H. Makins, C.B., London.
C. W. Mansell Moullin, London.
J. Rutherford Morison, Newcastle-on-Tyne.
J. H. Nicoll, Glasgow.
E. J. Parry, Pontycymmer, Glam.

Subscribers of Ten Pounds.

Robert Jones, Liverpool.
A. Garrod Thomas, Newport.

Subscribers of Six Guineas.

Honorary Staff of Stockport Infirmary, per E. Rayner, Stockport.

Subscribers of Five Guineas.

E. L. Adams, East Croydon.
Sir Lauder Brunton, London.
Edred M. Corner, London.
Henry Davy, Exeter.
A. Francis Dixon, Dublin.
W. Washington David, Llwynypia, Glam.
Sir H. M. Ellis, K.C.B., Director-General, Royal Navy.
T. D. Griffiths, Swansea.
R. W. Jones, Penrhiwceiber, Glam.
D. J. Jones, Pontypool, Mon.
R. Conway Joyce, Porth, Glam.
C. B. Keetley, London.
Pagan Lowe, Bath.
E. J. Maclean, Cardiff.
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Edmund Owen, London.
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J. Powell, Newcastle Emlyn.
H. M. Rigby, London.
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W. E. Thomas, Ystrad, Glam.
J. Tatham Thompson, Cardiff.
T. W. Thomas, Caerphilly.
D. J. Williams, Llanelly.
H. F. Waterhouse, London.
Sinclair White, Sheffield.
J. L. W. Ward, Merthyr.

Subscribers of Five Pounds.

Anthony A. Bowlby, C.M.G., London.
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Subscribers of Three Guineas.

W. F. Brook, Swansea.
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A. E. Barker, London.
Andrew Clark, Uxbridge, Middlesex.
F. Richardson Cross, Bristol.
E. Goodall, Cardiff.
Honorary Staff, General Infirmary, Macclesfield (per J. B. Hughes).
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Evan Jones, Aberdare.
Sir William Macewen, Glasgow.
D. Naunton Morgan, Gilfach Goch, Glam.
Medical Society, Watford (per Thomas Smith, hon. sec.)
D. R Paterson, Cardiff.
D. T. Richards, Risca, Mon.
W. Mitchell Stevens, Cardiff.
Alexis Thomson, Edinburgh.
C. T. Vachell, Cardiff.
W. J. Williams, Middlesbro-on-Tees.

Subscribers of Two Guineas.

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James Berry, London.
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R. T. B. Davies, New Tredegar, Mon.
E. Evans, Llanelly.
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J. Gutch, Ipswich.
W. S. Haughton, Dublin.
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W. Ll. Jones, Merthyr.
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J. A. Macdonald, Taunton.
G. A. Morton, Bristol.
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P. Macgregor, Huddersfield.
Sir R. Douglas Powell, Bart., K.C.V.O., London.
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T. W. Parry, Ferndale, Glam.
R. J. Pye-Smith, Sheffield.
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J. Hugh Rees, Penarth, Glam.
W. D. Steel, Abergavenny.
R. Shingleton Smith, Bristol.
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B. Thornton, Margate.
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Thomas Wallace, Cardiff.
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H. A. Whitelocke, Oxford.
W. A. Wetwan, Bridlington.

Subscribers of One Guinea.

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J. J. Buist, Cardiff.
J. E. Biggs, Cardiff.
W. Lyne Blight, Cardiff.
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Thomas Leah, Plymouth.
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J. N. Macmullan, Penarth, Glam.
R. D. Morgan, Ynysybwl, Glam.
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O. E. B. Marsh, Newport, Mon.
T. McCarthy, Sherborne, Dorset.
Harold F. Mole, Bristol.
K. W. Monsarrat, Liverpool.
L. Wayne Morgan, Cardiff.
A. Miller, Grimsby.
R. A. Milligan, Northampton.
R. D. Mothersole, Bolton.
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E. W. Martland, Oldham.
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Henry E. May, St. Albans.
R. T. Milner, Manchester.
John W. Mackenzie, Inverness.
J. A. C. Macewen, Glasgow.
W. Nicholson, Cardiff.
G. P. Newbolt, Liverpool.
Guy B. Nicholson, Hull.
Sir Isambard Owen, Newcastle-on-Tyne.
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Frederick Page, Newcastle-on-Tyne.
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Athol S. J. Pearse, Cardiff.
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G. A. Phillips, Walsall.
A. P. Parker, Oxford.
Wyndham Powell, London.
Bernard Pitts, London.
W. C. Pritchard, St. Leonards-on-Sea.
R. Vernon Pegge, Briton Ferry.
H. J. Roberts, Pen-y-groes, Carnarvonshire.
Howell Rees, Cardiff.
A. Rees, Cardiff.
Owen L. Rhys, Cardiff.
L. Roberts, Pontypridd.
Wm. Robinson, Sunderland.
J. W. Ramsay, Bournemouth.
W. Randall, Bridgend.
W. L. Ross, Burslem, Staffs.
G. F. Rossiter, Weston-super-Mare.
J. M. Rattray, Frome, Somerset.
Canny Ryall, London.
W. Silverwood Richardson, Boscombe.
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G. R. Sparrow, Cardiff.
H. W. Shettle, Southampton.
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C. J. Symonds, London.
Henry Smith, Durham.
H. R. Sedgwick, Kingston-on-Thames.
J. Sherren, London.
Mary Scharlieb, London.
W. B. Crawford Treasure, Cardiff.
R. Russell Thomas, Cardiff.
R. H. S. Torney, Cowbridge, Glam.
J. Taylor, Chester.
T. J. Bell Thomas, Maesteg.
G. Grey Turner, Newcastle-on-Tyne.
G. H. Temple, Western-super-Mare.
Francis Vacher, Birkenhead.
Cyril Wace, Winchester.
C. H. Walker, Bristol.
T. M. Wills, Liverpool.
J. D. Wardale, Newcastle-on-Tyne.
D. C. Williams, Treherbert.
R. T. Worthington, Lowestoft.
W. A. E. Waller, Rugby.
C. J. Weichert, Penygraig, Glam.
Walters, Ogle, Walters and Pegg, Reigate.
T. J. Wood, Bradford.

Subscribers of One Pound.

Cecil H. Leaf, London.
W. A. Morris, Lieutenant-Colonel R.A.M.C.
G. C. Wilkin, Paignton.

Subscribers of Half a Guinea.

A. V. Clarke, Leicester.
Alfred Cox, Gateshead.
Alexander Don, Dundee.
H. Howell Evans, London.
W. E. Gibbons, Leicester.
W. B. Jones, Llangammarch Wells.
Priestley Leech, Halifax.
M. E. Mitchell, Guildford.
E. O. Price, Bangor.
R. W. Roberts, Port Talbot.
G. R. Rickett, Sherborne, Dorset.
J. F. Whittingdale, Sherborne.

Subscribers of Five Shillings.

W. Ainslie, Kingston, Herefordshire.
F. G. Layton, Walsall.
H. L. Pearson, Birkenhead.

Anonymous ... ... 2s. 6d.

MEDICINE AND THE LAW.

Prosecutions for Sending Indecent Matter by Post.

ON March 17th two prosecutions took place at Bow-street police court, under the Post Office Protection Act, 1884, for sending indecent matter through the post. In the first the defendant was Robert S. Sievier, editor of a sporting newspaper, the *Winning Post*, which has lately attracted to itself attention by publishing on its first page paragraphs and anecdotes of such a character that even the defendant could not have expected legal proceedings in respect of them to be delayed much longer. It was urged in his defence that the *Winning Post* was a sporting publication, the principal contents of which commended it to bookmakers and others addicted to racing and kindred pursuits and that the morals of such persons were not likely to be rendered worse by reading paragraphs of the kind in question (a line of defence which surely libels the racing public). At the same time, it was stated that the defendant was willing to discontinue the matter complained of if it were thought that there were people who bought the paper and who were likely to be offended. The magistrate, Mr. Marsham, in convicting the defendant, whom he fined £10 with £5 5*s.* costs, spoke of the *Winning Post* as a good sporting paper, the tone of which was spoilt and its value deteriorated by paragraphs such as those which formed the subject of the prosecution. In this case the newspaper was, and is, published in the usual manner and recourse had been had to the Post Office Protection Act apparently as a matter of convenience, a detective having written to the publisher in consequence of complaints received and having thereby obtained through the post the copies produced in evidence. The second prosecution to which reference has been made was a more genuine instance of the usefulness of the statute. The defendants were the Cardinal Manufacturing Company (Limited), of Wilson-street, Finsbury, which had sent through the post a mass of indecent matter addressed to a married lady who had recently borne a child and had announced the birth in the usual manner in the newspapers. It so happened that her husband was a medical man who, naturally incensed by such conduct, had the courage and public spirit to set on foot proceedings against those responsible, with a view to protecting himself and others, if possible, against a repetition of it. He is to be congratulated upon the result of his action, as the company was convicted and fined £10 with £5 5*s.* costs. In commenting upon these two cases it may be said fairly that both convictions were deserved, but that whereas none need endeavour to minimise the harm done by obscene innuendoes put in a form intended to raise mirth among the more brutalised of the readers of a sporting newspaper, the other class of obscenity referred to represents a more insidious form of corruption of the mental and bodily health of the public. The forwarding by post of advertisements intended to enable the limitation of families may be an outcome of prosecutions which have cleared the pages of respectable newspapers of the invitations of the quack abortionist and his tribe. There has been great improvement in this respect, and no doubt there is a large class of persons who cannot be reached as easily as at one time was possible. It must not, however, be supposed for a moment that these very objectionable advertisements do not now appear anywhere in public prints. We have before us a copy of *Photo Bits*, a publication selected at random owing to the vulgarity of its illustrations and general contents, as one apparently appealing to a class likely to be allured and corrupted. On the last pages of the number under notice appear no less than 13 advertisements of "rubber goods," which, we believe, would not be permitted in a public urinal, six advertisements directed expressly to married persons, and about the same number addressed to "ladies" and "females," the character of all of which is obvious. We do not suggest that all these advertisements emanate from different firms: it is fairly plain that several of them are from the same source although different addresses are used. We do not pretend that all are of equal flagrancy but we note that in one the removal of the familiar "obstructions arising from any cause whatever" is promised, and the names of this and of other advertisers have been frequently seen appended to paragraphs which might well have commended them to the observation of the police. All advertisements such as we have described above are of a character discreditable to the newspaper which inserts them, and some of them suggest the desirability of close scrutiny of the trade sought to be furthered by them. The possible liability of the newspaper inserting them might also be considered seriously by those responsible for its production. There is no need to comment upon the fallacies underlying the suggestion made in the *Winning Post* case to the effect that indecent matter is blameless if laid before indecent-minded people because it cannot make them worse than they are already, but we would place to the credit of the sporting weekly that no advertisements of the class criticised defile its pages.

Mr. Plowden and the Evidence of Divisional Surgeons of Police.

At Marlborough-street police court recently Mr. Plowden expressed disapproval with regard to what he considered the unduly large number of cases before him in which the divisional surgeon had been summoned to examine persons arrested upon charges of drunkenness. This course was apparently adopted by the police on all occasions when the person arrested denied being drunk. Mr. Plowden said, according to the report published in the *Daily Telegraph*, that "such a frequent calling upon the doctor was putting him in the magistrate's place. It was for a magistrate to say whether a prisoner was drunk or not, and sending for a medical man in this way was simply paralysing justice. The medical fees were out of all proportion to the fines in these cases and he should disallow the fees in imposing fines in all cases where the medical man had been sent for on shallow grounds." Mr. Plowden then proceeded to ask the prisoners in turn whether they had asked for a medical man to be summoned or had consented to be examined by him, and when they said that they had done so he added the fee to the fine, but disallowed it when they said otherwise. It would not be easy for Mr. Plowden to justify any such statement as that with which he is credited above. It is for the magistrate to convict or to acquit the prisoner on the evidence before him and to punish him if he finds him guilty, and it is usually considered desirable that the decision whether for or against the prisoner should be founded upon the best evidence obtainable. If the evidence of a medical man is not the best evidence obtainable it is difficult to explain why Mr. Plowden should attach so much weight to it that he feels practically bound to decide in accordance with it—which is apparently the meaning of his saying that sending for a medical man was "paralysing justice." If the persons charged with drunkenness deny being drunk at the time of their arrest the police cannot possibly prophesy whether on the following morning they will claim to have been sober the night before and accuse the police of misconduct or will admit the charge against them, and in fairness to their prisoners and to themselves they call in the assistance of an independent expert. To convict a man in the morning of drunkenness and at the same time to accept his statement as to what he said the night before when drunk and excited by arrest is also hardly logical. The medical man, whether a police surgeon or not, is an expert whose evidence is less liable to the suggestion of bias than that of the constable who effected the arrest or that of the officer in charge of the police-station who orders the prisoner to be placed in a cell. The medical man is not "put in the magistrate's place"; he is called in in order that he may form and give an opinion upon a question which may be in dispute and he expresses that opinion in the witness-box in addition to, or in contradiction of, the evidence of the police and of other witnesses according as the facts under his observation may require. If he is "put in the magistrate's place" by being sent for, then the

magistrate should take the place of the medical man and cause himself to be sent for when drunkenness is disputed at the police station in order to form his opinion at the time and on the spot. Otherwise he has to form it next day upon the evidence of the less qualified of the witnesses available after having declined to allow better evidence within easy reach to be presented to him, a course more likely to "paralyse justice" than the summoning of a medical man in a few instances in which his presence is not absolutely necessary. The fact that a medical man in some cases of apparent drunkenness and in others where the prisoner is, in fact, intoxicated may be able to render valuable assistance is also one not to be lost sight of.

CENTRAL MIDWIVES BOARD.

A MEETING of the Central Midwives Board was held at Caxton House, Westminster, on March 19th, Dr. F. H. CHAMPNEYS being in the chair.

Mr. J. WARD COUSINS moved the following:—

That as no arrangement for the payment of fees to medical men summoned to assist certified midwives has been made satisfactory to the medical practitioners of the country, the time has arrived for the Board to reconsider the question, with special reference to the efficient operation of the Midwives Act, 1902.

He said that the Central Midwives Board should reconsider the question of payment to medical men summoned to assist certified midwives. All the great medical colleges and corporations, the British Medical Association, and the Society of Apothecaries were of opinion that the Board should reconsider the question. Up to the present time that Board had not achieved anything. They knew that certain places like Liverpool, Manchester, and Birmingham had arranged for the payment of fees to medical men summoned to assist certified midwives, but the Midwives Act extended over England and Wales and practically nothing had been done. No method of dealing with this question would be sufficient unless it applied to the whole of the area under the control of the Board. Medical men would never be satisfied with the partial suggestions contained in the circular of the Local Government Board dated July 29th, 1907, addressed to all boards of guardians. In that circular the Local Government Board intimated that if the guardians would only be kind and liberal and pay medical men called in by midwives if the guardians thought fit, then there would be an end to the difficulty and the medical men would have nothing to complain about. But there was not a single argument proving that those directions to the guardians were in any way satisfactory to the medical profession. His own feeling was that if anything was done it must be done by the Central Midwives Board. By the third section of the Midwives Act it was provided that the duties and powers of the Board were to do any act or duty which might be necessary for the due and proper carrying out of the provisions of the Act. He must, however, leave the exact legal meaning of those words to those who interpreted Acts of Parliament, but he maintained that it was absolutely impossible for the Act to be successfully carried out unless the difficulty in regard to the payment of medical men summoned by certain midwives was fairly met. He further wished to emphasise the fact that if the Act was not carried out it was the poor women and children of this country who would suffer. In 1910 all the old "Sairey Gamps" would be cut off from the practice of midwifery, and unless provision was made for the payment of medical men the certified midwives would be left without assistance, for it was absurd to expect medical men to attend cases for nothing. The suggestion that the difficulty could be met by an amendment of the Midwives Act was useless because there was not the slightest prospect of that coming about. It seemed to him, therefore, that the Central Midwives Board must find a solution of the difficulty and they must arrange for another interview with the Local Government Board to discuss the matter. He was quite sure that the idea of leaving the question of the payment of medical men to the boards of guardians was futile, for the boards of guardians would not think fit to pay the fees. From his experience of guardians if the question of a fee to a medical man was before them it would be discussed for hours and nothing would be done. The whole matter would assume a different aspect if the Local Government Board ordered boards of guardians to pay the fees of medical men, directing that the applications for such payments should be made to the guardians through the local supervising authorities. The important point was that the Central Midwives Board should draw up a fair scale of fees for medical men called in by certified midwives and then interview the Local Government Board and explain the difficulties attending the working of the Midwives Act. In that way a great deal of good would be produced, and he hoped by that means the breach between medical men and midwives would be healed.

Mr. E. PARKER YOUNG, in seconding the motion, said that the Government ought to take the matter up. The Act ought to act smoothly instead of being, as it was at present, unworkable. The Government ought to make proper provision for the payment of medical men and the matter ought not to be left to the decision of guardians whether they thought fit to pay or not. If the motion was carried they could go to Mr. John Burns, who was a fair man, and discuss it with him.

Dr. STANLEY B. ATKINSON suggested that the words "and certified midwives" should be added after the word "practitioners," and this was accepted by the mover and seconder of the motion.

Dr. CHAMPNEYS said that they had reason to be grateful to the Local Government Board for issuing the circular of July 29th, 1907. The circular did not solve the whole question, but that was another matter; at any rate it was a recognition that something ought to be done. He then proceeded to read out the circular of the Local Government Board of July 29th, and said it was a document that could not be passed over as unsatisfactory and it ought to be known to medical men. More was required than had been done but it was not in accordance with facts to state that the Central Midwives Board had not done anything in regard to this question of payment of medical men. The following record taken by the secretary, Mr. Duncan, from the minutes of the Board showed how much attention and care the Board had expended on that important subject. Dr. Champneys then read out the following:—

On February 25th, 1904, it was moved by Mr. Parker Young, seconded by Mr. Ward Cousins, and unanimously resolved: "That inasmuch as no provision is made in the Midwives Act, 1902, for the payment of legally qualified medical practitioners, the Government be requested to take the necessary steps for amending the Act, by introducing a section or otherwise, to provide for the payment of legally qualified medical practitioners when called in by midwives in difficult cases. Resolved further that a copy of this resolution be sent to the Privy Council. Resolved also that the secretary do include this resolution in the summary of the proceedings of the Board as supplied by him to the press."

On November 24th, 1904, a letter was read from the hon. secretary of the Metropolitan Counties Branch of the British Medical Association inclosing a copy of a letter addressed by the branch to the London County Council, with accompanying pamphlet, and asking for the coöperation of the Board with the London County Council in obtaining powers from Parliament to pay registered medical practitioners when called in by midwives in emergencies. It was moved by Mr. Parker Young, seconded by Mr. Ward Cousins, and unanimously resolved: "That the hon. secretary of the Metropolitan Counties Branch of the British Medical Association be informed, (1) that this Board agrees that statutory provision should be made for the payment of the services of a registered medical practitioner when called in by a midwife in accordance with the rules of the Board; (2) that the Board has already forwarded a resolution to this effect to the Privy Council."

On July 26th, 1906, a letter was read from the clerk of the London County Council inclosing a copy of a letter from a certified midwife as to the payment of fees to medical practitioners when summoned in cases of emergency. Resolved: "That the London County Council be informed that the Board has repeatedly urged the amendment of the Midwives Act so as to provide for the payment of such fees, and that in some cases boards of guardians pay such fees where the poverty of the patient appears to justify such a course without insisting on the order of the relieving officer being obtained beforehand."

On June 27th, 1907, the adjourned consideration of the report of the Midwives Act Amendment Committee was then proceeded with. Resolved: "That provision should be made for the payment out of public funds of reasonable fees to medical practitioners sent for in emergencies in accordance with the rules of the Board, with power to recover such fees from the patient or other person responsible, in suitable cases."

On November 28th, 1907, a letter was read from Dr. W. P. T. Daniel, of 273, Cable-street, London, E., forwarding a copy of a resolution adopted at a meeting of medical men residing in the parish of St. George-in-the-East and neighbourhood, declaring their intention, after November 30th, not to proceed to any case of parturition, &c., occurring in the parish, on the requisition of a midwife, unless a minimum fee of one guinea is guaranteed either by the guardians or by the Central Midwives Board. Resolved: "(*a*) That a copy of the correspondence be sent to the Privy Council, pointing out the difficulties and dangers of the situation, and suggesting that a copy of the Local Government Board's circular on the subject, dated July 29th, 1907, should be forwarded to every medical practitioner in England and Wales. (*b*) That the Board's action in the matter be communicated to Dr. Daniel, and that he be informed that the Board has no power to pay fees in such cases."

The Privy Council had adopted the Board's suggestion that

a copy of the Local Government Board's circular should be forwarded to every medical practitioner in England and Wales in a modified form. They had omitted the names of those medical practitioners residing in certain streets in the large towns, where only consultants could be reasonably expected to be found. In addition to this, the matter had been the subject of continual conversation between the officials of the Privy Council on the one side and the chairman and the secretary of the Board on the other. The point that ought to be understood was that the omission in the Act could only be cured by fresh legislation, and although that had been repeatedly urged upon the Privy Council, it had not hitherto seen its way to undertake it. The Board therefore had not neglected its duties in regard to that subject. Mr. Parker Young took a gloomy view about the Midwives Act being unworkable; in a sense it was so, but in spite of certain clogs on its wheels the Act had been worked, though they all agreed it was not working as it ought to. Midwives must be supplemented and medical men must be paid and when that was done it would not be a long time before it would be a profitable expenditure and would put money in the pockets of the country by securing the health of the women and the children. The Central Midwives Board must indicate to the proper authorities in what way the Act can be amended. A step in the right direction had been made by the issue of the circular of the Local Government Board and it was of great importance because a great principle was thus accepted.

Mr. WARD COUSINS said the Board had not done enough and the difficulty had not been overcome which rendered the working of the Act impossible.

Dr. CHAMPNEYS here explained that it must not be understood that he was in any way opposed to the motion proposed by Mr. Ward Cousins.

Mr. WARD COUSINS, resuming, said that if the Board voted for the motion then the Board must interview Mr. John Burns.

The motion was then put with the addition mentioned above and was carried unanimously.

The question of formulating definite proposals to be submitted to the Privy Council and the Local Government Board was referred to the Standing Committee.

A letter was received from the Under Secretary of State for the Home Department informing the Board that the chief constables of counties and boroughs and the commissioners of police of the metropolis and of the City of London had been requested to report convictions of midwives directly to the Board.

A letter was received from the Clerk of the Privy Council stating that the Treasury had authorised the Controller of His Majesty's Stationery Office to arrange with the Board for the supply of copies of the Midwives Roll of 1908 and to distribute the same to the coroners of England and Wales.

A letter was considered from the Devon and Cornwall Training School for Nurses asking the Board to hold an examination at Plymouth. It was decided that the request should be refused, the probable number of candidates being at present insufficient to warrant the holding of an examination at Plymouth, but when 20 candidates can be guaranteed the Board would reconsider the matter.

A letter was considered from the clerk of the London County Council as to the construction of Rule E 26, and it was decided that the London County Council should be informed that the amendment of Rule E 26 having been dealt with the Board does not propose to reopen the question at present.

A letter was received from the registrar of the General Medical Council concerning the communication made to it by the Board with reference to the late master of the Coombe Hospital, Dublin, stating that the Council did not propose to take any steps in the matter. A letter was received from the registrar of the Coombe Hospital, Dublin, forwarding a copy of a resolution passed by the board of governors of the hospital requesting the Central Midwives Board to reinstate the Coombe Hospital as an approved training school, and it was decided that the request should be granted and that the name of the Coombe Hospital, Dublin, should be replaced on the list of approved training schools. The chairman also stated that the Central Midwives Board had reason to be satisfied with the straightforward way in which the authorities of Coombe Hospital had met the Board in regard to their representations.

A letter was considered from Dr. H. Handford, county medical officer of Notts, as to the construction of Rules E 1 and 5 which deal with directions to midwives concerning their duties to patient and child and their obligations with regard to disinfection, &c. It was decided that Dr. Handford should be informed that the case of a midwife suffering from septic ulcers or kindred complaints appears to fall within the terms of Rules E 1 and 5, or might be dealt with by the local sanitary authority under the Public Health Acts.

On the question of the training and supply of midwives the Board affirmed the following propositions and decided to forward a copy of them to the Privy Council:—

1. That midwives (who are "a necessity") will be unable to make a living in many localities without extraneous aid.
2. That such localities are very often exactly those in which their presence is most necessary from the poverty and (in some cases) the sparseness of the population.
3. That voluntary contributions cannot be relied upon to supply the whole of the necessary financial aid.
4. That for this purpose a Government grant is a necessity.
5. That if such a grant were provided a representative council of competent persons should be appointed to administer the fund thus constituted.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary Comitia was held on Friday, March 20th, Sir R. DOUGLAS POWELL, Bart., K.C.V.O., the President, being in the chair.

Licences to practise physic were granted to Bertram Arthur Lloyd, Birmingham University, and David Ranken, Durham University.

The following communications were received:—1. Three communications from the secretary of the Royal College of Surgeons of England reporting proceedings of the Council. One of these conveyed a proposal that the committees which have been separately appointed by the two Colleges on the subject of the medical inspection of school children and the teaching of hygiene should act together to form a joint committee. The proposal was agreed to. The physicians appointed are Sir W. S. Church, Dr. G. A. Heron, Sir Lauder Brunton, Dr. B. L. Abrahams, and Dr. W. H. Hamer. 2. From Dr. H. Cooper Pattin, medical officer of health of the city of Norwich, asking leave to have a sketch made from one of the portraits of Dr. Caius in the College for a medallion by a London sculptor. The request was granted. 3. From the secretary of the International Congress on Laryngology and Rhinology with a Türck-Czermak commemoration, to be held in Vienna on April 21st to 25th, 1908, inviting the College to send a delegate. The invitation was accepted and Sir Felix Semon was appointed to represent the College.

The Harveian Librarian (Dr. J. F. PAYNE) proposed, and the Treasurer (Sir DYCE DUCKWORTH) seconded, the following motion:—

That in pursuance of a resolution adopted at the meeting of the library committee, January 23rd last, a commencement be made of preparing a new printed catalogue of the College library.

The motion was adopted.

A report, dated March 3rd, was received from the committee of management. The report, which was adopted, recommended that University College School, Frognal, Hampstead, should be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry and physics.

The PRESIDENT then dissolved the Comitia.

A LINK WITH THE PAST.—The late Mr. John Joseph Ayre, M.R.C.S. Eng., L.S.A., of Eastlemes, Colne, Lancashire, whose death has been recently announced at the age of 96 years, was educated at King's College, London, and became a Licentiate of the Society of Apothecaries in 1832. He received the Membership of the Royal College of Surgeons of England in 1859. He belonged to a family which contributed several of its members to the medical profession. His father was Dr. John Ayre, and his uncle, with whom he was brought up, was Dr. Joseph Ayre, a physician of repute in London. Mr. Ayre lived during five reigns and told with interest his experiences as a medical practitioner during the long period over which his active work extended. Till the end of his life Mr. Ayre took an intellectual interest in all scientific discovery.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

The City of Carlisle.—Commenting upon the Notification of Births Act, 1907, Mr. William Brown expresses the opinion that the Act, if adopted by the urban district council, can exert no beneficial effect unless provision for personal supervision by a trained staff of nurses is made. There is no doubt that this is quite a sound conclusion and apparently the Local Government Board is taking the view that its consent to the adoption of the Act should not be given unless it can be shown that good use is likely to be made of the information obtained; in other words, the Act is apparently to be used as a lever for the appointment of health visitors. There has been a remarkable reduction in the number of cases of enteric fever in Carlisle during recent years and Mr. Brown, who has taken much interest in the matter, attributes such reduction to the removal of private slaughter-houses, of ashpits, and of privies, and to general sanitary measures making for cleanliness.

Ilkley Urban District.—Dr. Augustus H. Bampton has not found the slop-closet method of excrement disposal satisfactory owing to the impracticability of keeping the upper portion of the closets clean. In some instances such closets are, he thinks, no better than the old-fashioned rural privy and he inclines to the view that they may have been instrumental in the causation of diphtheria; indeed, he goes so far as to suggest that the "general adoption of slop water-closets in towns may account for the incidence of diphtheria being transferred from the rural to the town district, the town district having practically adopted the former rural privy." We are afraid that slop-closets are not of sufficiently wide distribution in the country generally to render this explanation a very probable one. The infantile mortality in the district is a low one, the rate for 1907 having been only 88·5 per 1000 births and the average for the last ten years only 110 per 1000. The alleged cause of deaths was in the majority of cases either premature birth or congenital defects, neither of which are, Dr. Bampton thinks, preventable. Defective germ plasm cannot, he thinks, "be controlled by legislation. The fault is *ab initio*. There always will be addled eggs." As regards tuberculosis the medical officer of health suggests that this disease may be becoming less and less fatal owing to the fact that we are as a community becoming to a certain degree protected, possibly by repeated small doses of the bacillus.

Borough of Sutton Coldfield.—Dr. A. Bostock Hill refers in his current annual report to a case of diphtheria in which he regards the evidence as pointing to the conclusion that the disease was contracted from a cat which had been unwell before the patient showed signs of the malady. Later the cat became so ill that its destruction was considered advisable and upon some of the secretion from the throat being examined the diphtheria bacillus was detected.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8663 births and 5257 deaths were registered during the week ending March 21st. The mean annual rate of mortality in these towns, which had been equal to 17·6 and 17·2 per 1000 in the two preceding weeks, further declined to 16·9 in the week under notice. During the first 12 weeks of the current quarter the annual death-rate in these towns averaged 18·1 per 1000; the mean rate in London during the same period did not exceed 17·7. The lowest annual death-rates in the 76 towns last week were 8·8 in Great Yarmouth, 9·0 in Hornsey, 10·3 in York, and 10·5 in Aston Manor; the rates in the other towns ranged upwards to 25·0 in St. Helens and in Wigan, 25·2 in Bootle, 25·7 in Middlesbrough, and 27·6 in Hanley. The rate of mortality in London last week did not exceed 15·8 per 1000. The 5257 deaths in the 76 towns last week showed a further decline of 92 from the number in recent weeks, and included 409 which were referred to the principal epidemic diseases, against 414 and 400 in the two preceding weeks; of these, 151 resulted from whooping-cough, 112 from measles, 62 from diphtheria, 38 from diarrhœa, 30 from scarlet fever, and 16 from "fever" (principally enteric), but not one from small-pox. The deaths from these epidemic diseases in the 76 towns were equal to an annual rate of 1·3 per 1000, corresponding with the rate in each of the two preceding weeks; the rate from the same diseases in London did not exceed 1·1. No death from any of these epidemic diseases was registered last week in Leicester, Walthamstow, York, Devonport, Coventry, or in eight other smaller towns; the annual death-rates from these diseases ranged upwards, however, to 4·0 in Burnley, 4·3 in Rhondda, 4·8 in Salford, and 6·6 in Warrington. The fatal cases of whooping-cough in the 76 towns, which had been 138, 149, and 134 in the three preceding weeks, rose to 151 in the week under notice; the highest death-rates from this disease last week were 2·0 in Newport (Mon.), 2·3 in Sunderland, 3·0 in Wallasey, and 5·1 in Warrington. The 112 deaths from measles were, however, fewer by 13 than the number in the previous week, but caused death-rates equal to 2·0 in Burnley, 2·2 in Preston, 2·4 in Salford, 2·9 in Stockton-on-Tees, and 3·1 in Rhondda. The deaths referred to diphtheria, which had been 66 and 58 in the two preceding weeks, rose again to 62 in the week under notice; the highest death-rates from this disease last week were 1·5 in Bournemouth, in Smethwick, and in Warrington. The 30 fatal cases of scarlet fever showed a decline of five from the number in the previous week but included 11 in London, three in Salford, and two in Birmingham, Birkenhead, and in Burnley. The 38 deaths attributed to diarrhœa exceeded those in the previous week by ten. Of the 16 deaths referred to "fever" two were registered in London, in Liverpool, and in Leeds. The number of scarlet fever patients under treatment in the Metropolitan Asylums and London Fever Hospitals, which had steadily declined in the 15 preceding weeks from 5581 to 3429, had further fallen to 3356 on March 21st; 378 new cases were, however, admitted to these hospitals during the week under notice, against 345 and 312 in the two preceding weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had declined in the five previous weeks from 481 to 317, rose to 320 in the week under notice, but were ten below the corrected average number in the corresponding week of the five years 1903–07. The deaths directly referred to influenza in London further declined last week to 68, from 141, 122, and 93 in the three preceding weeks. The causes of 60, or 1·1 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified last week in Leeds, Bristol, West Ham, Newcastle-on-Tyne, Hull, Salford, and in 48 other smaller towns; 14 uncertified causes of deaths were, however, registered last week in Liverpool, 11 in Birmingham, eight in Sheffield, four in Sunderland, and three in South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 19·3 and 20·3 per 1000 in the two preceding weeks, declined to 18·5 in the week ending March 21st, but exceeded by 1·6 the mean rate during the same week in the 76 large English towns. Among the eight Scotch towns the death-rates last week ranged from 14·6 and 15·2 in Edinburgh and Aberdeen, to 21·3 in Dundee and 22·2 in Perth. The 652 deaths in these eight towns showed a decrease of 62 from the number returned in the previous week, and included 84 which were referred to the principal epidemic diseases, against 96 and 97 in the two preceding weeks; of these, 37 resulted from measles, 24 from whooping-cough, 13 from diarrhœa, five from scarlet fever, three from "fever," and two from diphtheria, but not one from small-pox. These 84 deaths were equal to an annual rate of 2·4 per 1000, which exceeded by 1·1 the mean rate last week from the same diseases in the 76 English towns. The fatal cases of measles in the eight towns, which had been 47 and 46 in the two preceding weeks, further declined to 37 in the week under notice, and included 30 in Glasgow and five in Edinburgh. The 24 deaths from whooping-cough showed a further increase of four upon the numbers in recent weeks; 13 were returned in Glasgow, three each in Edinburgh, Leith, and Dundee, and two in Greenock. Of the

13 deaths attributed to diarrhœa, six occurred in Glasgow, four in Dundee, and two in Aberdeen. Three of the five fatal cases of scarlet fever were returned in Glasgow. The three deaths referred to "fever" showed a marked decline from recent weekly numbers, and were fewer than in any previous week of this year; of the two in Glasgow, one was certified as enteric and one as cerebro-spinal meningitis; the one in Leith was due to cerebro-spinal meningitis. The deaths referred to diseases of the respiratory organs in these eight towns, which had been 156 and 142 in the two preceding weeks, rose again to 158 in the week under notice, and exceeded by 11 the number returned in the corresponding week of last year. The causes of 14, or 2·1 per cent., of the deaths in these eight towns last week were not certified; in the 76 English towns the proportion of uncertified causes of death in the same week did not exceed 1·1 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been equal to 24·1 and 24·8 per 1000 in the two preceding weeks, declined to 23·9 in the week ending March 21st. During the first 12 weeks of the current quarter the death-rate in the city averaged 25·3 per 1000, the mean rates during the same period being only 17·7 in London and 18·4 in Edinburgh. The 181 deaths of Dublin residents registered in the week under notice showed a decline of seven from the number returned in the previous week, and included but four which were referred to the principal epidemic diseases, corresponding with the number in the preceding week; these four deaths included one each from measles, scarlet fever, whooping-cough, and "fever," while no death resulted from diphtheria, diarrhœa, or small-pox. These four deaths were equal to an annual rate of but 0·5 per 1000, the death-rate last week from these principal epidemic diseases being equal to 1·1 in London and to 1·3 in Edinburgh. The 181 deaths from all causes in Dublin last week included 26 of infants under one year of age and 63 of persons aged upwards of 60 years; the deaths of infants showed a decline, while those of elderly persons exceeded those returned in recent weeks. Two inquest cases but no deaths from violence were registered, and 95, or 52·5 per cent., of the deaths occurred in public institutions. The causes of four, or 2·2 per cent., of the deaths in Dublin last week were not certified; in London all but one of the 1455 causes of death were duly certified, while in Edinburgh the proportion of uncertified deaths was 4·0 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Surgeon Herbert Lyne Geoghegan has been promoted to the rank of Staff Surgeon in His Majesty's Fleet (dated May 15th, 1907).

The following appointments are notified:—Fleet Surgeons: R. Miller to the *President*, additional, temporarily. Surgeon: E. A. G. Wilkinson to the *Racer* for Osborne College. Civil Practitioner: D. Hadden, appointed surgeon and agent at Wexford.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Charles W. Thiele retires on retired pay (dated March 21st, 1908).

Lieutenant-Colonel W. Rowney has been appointed to the medical charge of the Connaught Hospital, North Camp, Aldershot. Lieutenant-Colonel H. J. Barratt has been appointed to medical charge at Shorncliffe. Major W. H. Horrocks has been appointed sanitary officer in London.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain Edgar W. Livesey to be Surgeon-Major (dated March 14th, 1908).

IMPERIAL YEOMANRY.

Royal East Kent (The Duke of Connaught's Own): Campbell Tilbury Fox to be Surgeon-Lieutenant (dated Feb. 26th, 1908). Northamptonshire: Surgeon-Lieutenant Edward M. Knott resigns his commission (dated Feb. 24th, 1908).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): The Highland: Surgeon-Major J. M. Moir to be Surgeon-Lieutenant-Colonel (dated Feb. 10th, 1908). 2nd Lancashire: Surgeon-Captain Thomas Stevenson to be Surgeon-Major (dated March 3rd, 1908).

Rifle: 7th (Isle of Man) Volunteer Battalion, The King's (Liverpool Regiment): Surgeon-Captain William Richardson to be Surgeon-Major (dated Feb. 13th, 1908). 2nd (Prince of Wales's) Volunteer Battalion, The Devonshire Regiment: Surgeon-Captain Ernest P. A. Mariette to be Surgeon-Major (dated Feb. 18th, 1908). 1st Cinque Ports Volunteer Rifle Corps: Alfred Alexander to be Surgeon-Lieutenant (dated Feb. 24th, 1908). 1st Volunteer Battalion, The Durham Light Infantry: Douglas Vercoe Haig to be Surgeon-Lieutenant (dated Jan. 30th, 1908); David Leonard Fisher to be Surgeon-Lieutenant (dated Jan. 31st, 1908); George Greig Farquhar to be Surgeon-Lieutenant (dated Feb. 1st, 1908).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

London District: London Companies: George Langrigg Leathes Lawson (late Surgeon-Captain, 6th Regiment, Imperial Bushmen, New South Wales) to be Lieutenant (dated June 1st, 1907).

ROYAL VISIT TO MILLBANK.

On March 20th the Queen, accompanied by the Dowager Empress of Russia and Princess Victoria, paid a surprise visit to the Royal Military Hospital and to the Royal Army College, Millbank. Lord Roberts, Sir Frederick Treves, Sir Alfred Keogh (Director-General of the Army Medical Service), and others received the Royal party, who carefully inspected all the buildings. In the pathological laboratory of the Royal Army Medical College Colonel Bruce, explained the work done in that department of the College.

THE ALEXANDRA MILITARY HOSPITAL.

The Alexandra Military Hospital at Cosham, which has recently been formally occupied, the projected Royal opening having been abandoned, will accommodate 220 patients. The new hospital is situated on the slopes of Portsdown Hill and will serve the Southern Military Division. It was built to replace Netley Hospital and the Station Hospital at Portsmouth.

Captain F. J. Brakenridge, R.A.M.C., has received the King's permission to accept and to wear the Imperial Ottoman Order of the Medjidieh of the Fourth Class which has been conferred upon him by the Khedive of Egypt in recognition of valuable services rendered.

It is announced that officers of the Royal Army Medical Corps cannot be considered regimental officers for the purpose of drawing detention allowances under Clause 1 of Indian Army Order No. 405 of 1907.

Correspondence.

"Audi alteram partem."

CHANGES IN THE HEART DURING ADOLESCENCE.

To the Editor of THE LANCET.

SIR,—In a recent leading article you did me the honour to quote from my observations on the changes, in size and proportion, of the heart during the period of adolescence, published in the "Report of the Health of the Navy" for the year 1902. Permit me to add that further experience and investigation have convinced me that this condition is physiological rather than pathological and is much more common than is generally supposed. The present state of athletics in excelsis renders obvious the necessity of a vigilant observation on growing youths by their responsible medical advisers. Fortunately, our increased knowledge of the normal evolution of the heart and the disorders of its structures and mechanism indicates both a preventive hygiene and a rational therapeusis, if these cases are only taken in time. In my report I alluded to the following points which may interest some of your readers and which I submit to their judgment and criticism.

Since Hope in 1839 laid down that a certain class of cardiac murmurs were due to altered physical properties of the blood, to unfilled vessels, and modified velocity of current, his views were almost universally accepted until quite recent years, although Skoda in 1853 expressed some doubt that a depraved state of the blood should necessarily create

murmur, considering that in malignant disease and in some forms of phthisis in which the heart becomes atrophied *and not dilated* the so-called hæmic murmurs are absent. Now, however, the subject has been reconsidered by Balfour, MacAlister, Heitler of Vienna, and many others, and some of the interest hitherto monopolised by the valvular apparatus has been transferred to the state of the cardiac muscle and its nervous relations, with the result that it is now conclusively proved that dilatation *per se* apart from any purely valvular defects or abnormalities leads to regurgitation at the auriculo-ventricular orifices. ..... This condition, as long as it remains only slight and being associated with a normal physiological developmental process, naturally tends to repair or to a spontaneously favourable end. ..... Similar symptoms occur also later in life in adults, previously healthy, who have been subjected to unaccustomed forced exertion ..... these cases, in my opinion, are nearly always curable if they are treated rationally and with patience. No medicine is of the slightest use to obtain relief which can only be effected by providing a prolonged rest in the recumbent position for at least two hours in the middle of the day, so as to improve the muscular tone of the heart in allowing it to recover its exhausted energies and strength. ..... I submit a few practical points in determining the condition of the heart of the young adult, often a question difficult to decide accurately during the peculiar period of development at which it so often comes under our notice. In estimating the area of cardiac dulness choose the erect posture and the period of expiration. In the recumbent posture the intervening loose cellular tissue is not strong enough to keep the heart close to the sternum and ribs and preventing its receding by the force of gravity, and during inspiration either a large portion of lung may be brought in front of the heart, or the portion which is always in front of it may be so thickened by inflation as to thrust backwards for the time more of the heart than it actually covers. Even in the healthy heart the sound admits varieties in kind. A more clear sound proceeds from a thin heart and a duller sound from a thick heart; a sound of great extent from a large heart, of less extent from a small heart. Greater impulse is given by a thick heart, feebler by a thin one. Impulse is conveyed further from a large heart, to a shorter distance from a small one. The sounds and impulses mutually interpret each other. A clear sound indicates probability of an attenuated heart; joined to a weak impulse it becomes almost certain. A very strong impulse infers probability of an hypertrophied heart; joined with a diminished sound we argue its certainty. Impulse and sound increased together do not indicate hypertrophy, but forcible action from pure excess of nervous energy; impulse and sound decreasing together indicate defect of nervous energy, not atrophy. In persons of a nervous temperament the sounds of the healthy heart are of a high degree of intonation and acquire a greater audible extent under actual emotion far beyond the normal area. If I mistake not, after having examined nearly 3000 hearts in the past 15 months this condition is much more common in youths brought up in the bustle of great cities than in those of corresponding age reared in country districts. Never consider the sounds or impulse apart from the extrinsic circumstances which can so powerfully affect them. The condition of the diaphragm, of the abdominal cavity, the amount of adipose deposit in the superimposed structures, the configuration of the bones enclosing the thorax.

While recently doing a post-graduate course at St. Thomas's Hospital I think I heard Dr. Dyke Acland remark "that he had met somewhat similar conditions in lads from the public schools and that his treatment based on rest and modification of athletic exercises had been entirely successful." I am, Sir, yours faithfully,

THOS. E. H. WILLIAMS, F.R Hist.S.,
Deputy Inspector-General R.N. (retired).

Junior United Service Club, S.W., March 15th, 1908.

TANSINI METHOD FOR THE CURE OF CANCER OF THE BREAST.

To the Editor of THE LANCET.

SIR,—May I venture, with all respect for Italian surgery and its distinguished exponents Professor Tansini and Dr. Francesco Purpura, to criticise the Tansini method for the cure of cancer of the breast as described in THE LANCET of Feb. 29th. However ingenious, the method is not, I think, a reliable one because it fails to take into account certain facts of pathology. Save in regard to the precise shape of the area of skin removed, the method differs from that of Halstead only in the ingenious means adopted to cover in the raw area left by the operation. It has along with the merits the two capital defects of the Halstead operation. The first of these defects is that the area of skin removed is unnecessarily large, at any rate in the long axis of the oval portion ablated. The second defect is that no attempt is made to undermine the skin for the purpose of removing an extensive area of the deep fascia—a step which is absolutely essential on account of the proved fact that breast cancer spreads centrifugally by permeation of the deep fascial lymphatic plexus.

If only the moderate area of skin which is likely to be infected be removed, an area circular in shape and four or five inches in diameter, and if the skin flaps are undermined sufficiently to allow the removal of a possibly infected circle of deep fascia ten inches in diameter, it will be found in nearly every case that the long and mobile skin-flaps come together without any difficulty. The cutting of a large flap for transplantation, which must increase the severity and duration of the operation, becomes quite unnecessary. For these reasons it appears to me undesirable that the Tansini method of flap transplantation should be used, save in very exceptional cases. I am, Sir, yours faithfully,

W. SAMPSON HANDLEY.

Wimpole-street, W., March 14th, 1908.

ISOLATION HOSPITALS AND SCARLET FEVER.

To the Editor of THE LANCET.

SIR,—On June 8th, 1896, I wrote to you thus: "I think that it has yet to be proved that the adoption of notification and the removal of every detected case to a fever hospital have any material effect in lessening the prevalence and spread of scarlet fever in London and what chance is there of stamping it out?"

I think that my sceptical forecast has been amply justified. I read in THE LANCET of Jan. 4th, 1908, p. 42, that it was unanimously decided at a meeting of the Metropolitan Asylums Board "that in view of the continued prevalence of scarlet fever, notwithstanding the extensive isolation accommodation provided, the Local Government Board be asked to cause an inquiry to be instituted into the cause of the disease and whether any, and if so what, further means can be adopted for its prevention." The further particulars are added that the ratio of scarlet fever cases to population had increased from 3·7 per 1000 in 1890 to 4·3 per 1000 in 1906. Over £234,000 had been expended on sites and nearly £3,000,000 on building and equipment, besides a very large amount, doubtless, on maintenance. Yet "for that expenditure they were in no way better off from the point of view of the spread of infectious disease."

I think that if inquiries were pushed still further into matters of detail it would be found equally true, as I affirmed also, that patients are longer in recovering if treated in the hospitals than if treated at home—ten weeks and upwards, instead of six weeks; and that cases of scarlet fever have a better chance of recovery and avoiding complications if treated at home. I have not seen any reason to alter my opinion since then. Not only is it a grievous injustice for the ratepayers to bear this heavy burden of expenditure, but I believe that this indiscriminate charity does harm to the recipients.

A passage in Lockhart's "Life of Sir Walter Scott" is *apropos* and may serve as a warning: "And take care, he [Sir Walter Scott] added, not to give them [the poor] anything gratis; except when they are under the gripe of immediate *misery*—what *they* think misery—consider it as a sin to do anything that can tend to make them lose their precious feeling of independence ....." This sound principle is, it seems to me, habitually broken nowadays. Free education, free meals, free clothing, and free medical attendance for children, too abundant hospital treatment, old-age pensions, and other similar desiderata clamoured for by hot-headed Socialists cannot but tend to lessen this "precious feeling of independence." What the outcome of it will be the next few generations will show, but I do not think it will be satisfactory to the national welfare. I constantly see that there is no surer way of killing a patient than by (mistaken) kindness, and the same well-meant cause may produce wholesale moral ruin.

I am, Sir, yours faithfully,

F. LUCAS BENHAM, M.D., M.R.C.P. Lond.

Exeter, South Australia, Feb. 18th, 1908.

PANCREATITIS WITH JAUNDICE.

To the Editor of THE LANCET.

SIR,—In your issue of March 21st Dr. Sidney P. Phillips records an interesting case of pancreatitis with jaundice and acute parotitis in scarlet fever. In his comments Dr. Phillips states that "the case suggests a probable explanation of the jaundice occasionally occurring in scarlet fever, and incidentally, it may be added, it supports the contention that the so called 'catarrhal jaundice' is more often due to obstruction of the common bile-duct by the presence of an enlarged head of the pancreas than by thickened mucus within the duct." The probability of the correctness of this view has recently been demonstrated to me by observation

of two cases of pancreatitis with jaundice which I had the opportunity of investigating in Sir Thomas Fraser's wards in the Edinburgh Royal Infirmary. These cases were examined by me incidentally in the course of an extensive investigation into the clinical value of the pancreatic reaction in the urine (Cammidge). One of the cases was a patient with simple "catarrhal jaundice," the other was a case of malaria (malignant type) with jaundice. In each case a diagnosis of pancreatitis was made, from the association of (*a*) jaundice, (*b*) marked tenderness in the region of the head of the pancreas, and (*c*) a marked positive reaction in the urine by the pancreatic reaction. The results of my observations on these cases led me to conclude that the jaundice occasionally met with in malaria has its origin in pancreatic disease, and further that inflammation of the pancreas is an important factor in the development of simple "catarrhal jaundice." These views are in close accord with those expressed by Dr. Phillips, and in view of the clinical importance of the subject I have ventured to draw fresh attention to it.—I am, Sir, yours faithfully,

Edinburgh, March 22nd, 1908. CHALMERS WATSON.

THE STREAM HILL SANATORIUM SITE.

To the Editor of THE LANCET.

SIR,—In your issue of March 14th a letter appeared from Mr. Langley Brasier-Creagh, regarding the suitability of the Stream Hill site for a sanatorium for the county of Cork. As engineer appointed by the opposing ratepayers in the district of Buttevant and Doneraile to thoroughly examine the site and give evidence at the late Local Government Board inquiry I beg to say that, in my opinion, the site is utterly unsuitable for a sanatorium. The place is covered with patches of rushes, surface soil peat mould, and subsoil, most important of all, yellow marly clay, which is most retentive to moisture. I may add that I had a trial hole dug on the proposed site of the sanatorium building and found soil as described above, a sample of which I produced at the inquiry. I am, Sir, yours faithfully,

Killeagh, Co. Cork, March 21st, 1908. EDWIN GREEN, C.E.

INFLUENZA IN THE HOUSE OF COMMONS AND AN OPEN-AIR HALL.

To the Editor of THE LANCET.

SIR,—I should like to remind your readers that the experiment of an open-air hall for public gatherings is being already tried at Letchworth. An account of the building by the architect, illustrated by photographs, can be seen in the *Architectural Review* for March. We have encountered many difficulties, especially due to the exposed situation, and we have still various improvements to make. However, since the first week in January the hall has been in use, each week 50 or 60 people from Garden City sitting for an hour during an organ recital and an address in a hall which, though warmed by fires and hot-water pipes, is only protected from the open air on one side by tarpaulin and canvas curtains; these latter are removeable in fine weather. The building is also constructed, drained, and the floor fitted with corticene, so as to enable the place to be cleaned down regularly with a hose-pipe, thus avoiding any question of germs. I am, Sir, yours faithfully,

A. J. LAWRENCE.

The Cloisters, Open-air School, Letchworth, Herts.

PORT WINE AND ITS COUNTRY OF ORIGIN.

To the Editor of THE LANCET.

SIR,—A recent decision by a police-court magistrate to the effect that "port" in order to be port must come from Oporto reminds one of the old puzzle (which should have been cited on behalf of the prosecution): "Gdldprtfrmprtfrrthdxxfrddns," which, we used to be told, needed but the addition of a single vowel in order to make it intelligible. The vowel was, of course, "o," repeated often enough to form the sentence: "Good old port from Oporto for orthodox Oxford dons." It was invented in days when port and Oxford dons alike were orthodox.

I am, Sir, yours faithfully,

March 24th, 1908. A. A.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Walsall's New Sewage Scheme.

THE pressure brought to bear by the Local Government Board and the county council has compelled Walsall to face the question of a proper solution of its sewage problem. The desire of a town council to put off the adoption of a costly scheme is quite easy to understand in a period when taxes and rates are advancing in a way which is quite out of proportion to the returns from productive labour, but a proper sewage scheme has become a necessity and Walsall will have to face an increased rate of about 3*d*. in the £, for if the scheme be approved it will be necessary to ask the Local Government Board to sanction a loan of £62,734 to meet the costs, and the interest on that sum and other incidental expenses can only be met by an increased rate of 3*d*.

The Birmingham Industries Exhibition.

The object of the Birmingham Industries Exhibition which opens at the Bingley Hall to-day is to clear off the balance of the debt resulting from the purchasing, rebuilding, and equipping the Hospital Saturday Fund's convalescent home for women at Marble Hall, near Llandudno, to which some 1200 women and girls are sent every year. A sum of £4000 is necessary and at present there is every hope that the whole or the greater part will be secured, for the exhibition promises to be a great success. From its very constitution it will of necessity excite local interest and curiosity and an opportunity will be given to the visitors to hear excellent music, for the majority of the well-known bands of the country have been engaged to play in the hall during the weeks in which the exhibition will be open.

The Birmingham and Midland Hospital for Skin and Urinary Diseases.

During the year 1907 the number of in-patients treated in the above hospital was 184, or 19 more than in 1906, and the number of out-patients was 7317, showing an increase of 111 as compared with 1906. The total expenditure for the year was £2962 and it exceeded the income by a little more than £130. The committee states that unless the hospital can secure an increased annual income of £275 its work must be curtailed. In moving the adoption of the report the Lord Mayor remarked that he noticed that during the year 78 patients had been rejected in the out-patient department on the ground of their being able to pay for treatment, and he expressed the hope that very great consideration would be exercised before such rejections were made. With this hope the medical profession will be in cordial agreement, but it will also equally urge that every care should be taken that patients who can afford to pay shall not be treated gratuitously and that they shall not be taught to think that what sums they give as charitable aid to hospital funds are to be looked upon as club subscriptions entitling them to treatment.

March 23rd.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Ladies' Sanitary Association and Infantile Mortality.

THE Liverpool Ladies' Sanitary Association is endeavouring to raise a fund of £1500 to cope with the great waste caused by the appalling death-rate among infants and young children in the city. A suitable house has been purchased by the generosity of two ladies and will be used as a hostel for the children's nurses trained by the association. It will contain a day nursery where these nurses can obtain practical instruction in the care of infants. The association, in addition to the work of the hostel and day nursery, intends to send mothers' visitors out into the city to give advice and personal help to expectant mothers before confinement and to render some further assistance after midwives, medical men, or district nurses have ceased to visit these cases. A suitable matron has been engaged for the hostel and day nursery and it is intended to employ a trained lady to superintend the mothers' visitors. These mothers' visitors will have practical help in their work by

being able to visit the day nursery, to tend the infants there, and to consult with the matron. An urgent appeal is made to the charitable for funds to carry out this worthy object.

Warrington Infirmary Extension: Opening by Lord Cross.

The new extension to the Warrington Infirmary, which has been erected at a cost of £15,000, was opened on March 21st by Viscount Cross, G.C.B., in the presence of a large gathering of townspeople. The new block of buildings comprises a pavilion three storeys high, consisting of three wards, each ward containing 22 beds, and a nurses' home affording accommodation for 25 nurses. The growing requirements of the town have been of such a nature that an extension of the present building was deemed necessary. Towards the cost the sum of £14,913 has already been raised and it is confidently anticipated that the remainder will be shortly forthcoming. Lord Cross arrived at the town hall shortly after one o'clock, when he was met by the mayor and the representatives of the infirmary. A procession was formed, headed by the Volunteer band, and proceeded to the main door of the building. On arrival Sir Gilbert Greenall, Bart., invited Lord Cross to open the new extension and presented him with a gold key suitably inscribed. Lord Cross, who met with a warm reception, said that in the year 1877 he had had the honour of laying the foundation-stone of increased buildings to the infirmary. They had again given him the pleasing duty that day to do something towards further buildings. In the first place, one could readily see how the town and neighbourhood had increased in prosperity. The works had grown and the population had grown also. As the population had grown the cares and needs of the infirmary had increased. Although since 1877 a considerable addition was made it was found necessary to provide further accommodation. In 1877 there were only 87 in-patients, 948 home patients, and 1992 out-patients. The figures last year showed that there were 607 in-patients, 1441 home patients, and 3652 out-patients. Those increased figures made it quite clear that a want existed. He had great pleasure in declaring the building open. A tour of the buildings was then made by the visitors, after which luncheon was served in the drill-hall.

March 24th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Retirement of Sir Henry D. Littlejohn.

THERE has been a rumour current for some weeks that Sir Henry D. Littlejohn contemplated resigning the public offices which he has so long held. It is now known that he has tendered his resignation to the Edinburgh town council as its medical officer of health and as police surgeon. Two years ago he resigned the professorship of medical jurisprudence in the University after occupying the chair for ten years. As Sir Henry Littlejohn was born in 1828 everyone will feel that he is well entitled to relief from the strain of official duties and responsibilities. The two public offices mentioned have been held for 46 years, 1862 having been the year of his appointment to both. His term of office thus covered a period marked by great advances in sanitary science and the practical application of these by local authorities. It was his report on the sanitary condition of the city—one of the first things which he was called upon to do on his appointment in 1862—which led to the scheme for the improvement of the slum districts in the city and which has been carried out on an extensive scale. It was during the early years of his tenure of office that the Vaccination Act was applied to Scotland. It was also during his time that the city authorities provided a hospital for the reception and care of infectious cases first in the old Royal Infirmary buildings and later in the modern and well-equipped hospital at Colinton Mains. Before he occupied the chair of medical jurisprudence in the University he had for many years been a popular lecturer on the same subject in the extra-mural school. In addition he was medical adviser to the Local Government Board and to the Crown in Scotland in criminal cases. He was thus employed in all the great criminal trials of the past 60 years; indeed, as a medical expert he had a large practice and was a well-known figure in Parliament House. In 1895 the late Queen conferred on him the honour of knighthood. Although Sir Henry Littlejohn has wisely decided to curtail his activities he still shows a physical and a mental alertness that might well be envied by younger men and which will enable him to continue to interest himself in the various works of beneficence which he has always encouraged by his presence.

Royal Edinburgh Hospital for Sick Children.

The forty-ninth annual general meeting of those interested in this hospital was held on March 18th. The annual report showed that during the year 1907 2348 children had been treated in the wards. Of this number 534 were infants under one year. The average daily number of patients was 100. In the out-patient department 27,070 had been treated. The number of operations performed in the surgical theatre was 798, while minor operations in the out-patient department numbered 1361. The convalescent home had proved a most valuable adjunct to the hospital. The cost of carrying on the home had been £477. The ordinary income of the hospital was £6374, while the ordinary expenditure was £8475. The legacies received during the year amounted to £4895. The medical staff urges the need of a more adequate convalescent home and also of increased balcony accommodation in connexion with the wards.

The Medical Education of Women in Edinburgh.

The close of the winter session has been marked by some excitement amongst the women students of medicine in Edinburgh the cause of which will be dealt with next week.

The "Enteric Carrier."

A striking example of an "enteric carrier" and the damage that he or she may unwittingly do is brought to light in the report of the city bacteriologist on his work in connexion with the recent epidemic of enteric fever in the west-end of Glasgow. At one farm where investigations were carried out the investigators failed to obtain any enteric bacilli by an examination of the dairy vessels, the drains and surroundings of the steadings, or the milkers—with one exception. This exception was an elderly woman who had suffered from enteric fever 16 years before, and bacteriological tests showed that she was still infective. The source of infection at this farm appears to have been responsible for the first eight cases, including that of the farm patient whose illness was at first diagnosed as pneumonia. This last patient, it will be remembered, was nursed for some time in the farm kitchen and she was apparently directly responsible for the spread of the outbreak in Glasgow. A danger of missed diagnosis, however, as in that case is one easily understood and one that can be combated by compulsory notification of any illness occurring in a farm supplying milk to the public. It is a much more alarming state of matters if one has to bear in mind the possibility of an epidemic being started by farm workers or dairymen who at some far remote period of their lives have suffered from enteric fever.

The Tenure of Office of Scottish Poor-law Medical Officers.

The unsatisfactory state of the law with regard to tenure of office by Poor-law medical officers in Scotland is a frequent subject of comment in THE LANCET and a remarkable example of the mischievous effects of the present system is published in a recent issue of the *John o' Groat Journal*. On the extreme north coast of Scotland there is a parish called Farr in the county of Sutherland. It has an area of about 188 000 acres with a population of about 2000 persons. Since 1903 the Farr parish council has had five medical officers. Three of those have been dismissed and another left suddenly. The present holder of the appointment, Mr. Thomas Homer, who has now been more than two years in the parish, has incurred the hostility of a section of the council and a motion for his dismissal was discussed at a meeting of that body held on Feb. 11th. According to the published report the proceedings formed a scene of almost continuous uproar and altercations. After Mr. Homer's dismissal had been duly moved and seconded a deputation came forward headed by a Mr. Donald Mackay who in stirring language made accusations against the officials of the parish charging them with endeavouring to take sole control of the parish business. He declared that he was going to fight for the interests of the parish while he had a breath left in his body. Several petitions were then produced by Mr. Mackay. One of these had reference to the "intolerable position" which had been created "owing to the doctor not working harmoniously along with the nurse," and several speakers made various charges against Mr. Homer. Mr. Homer in his turn several times appealed to the meeting for a hearing

in reply to the statements made against him, but he was shouted down. Mr. William McLeod then remarked that the parish council could dismiss a medical officer at any time without giving any reason, and went on to say: "A doctor is like a herd boy. You can dismiss him at any time by giving him notice." On a vote being taken five members voted in favour of Mr. Homer's dismissal and five against it. The chairman then gave his casting vote against the dismissal, which was the signal for a howl of disapproval and a chorus of violent protests. The disorderly incidents of this meeting and the threatening attitude of a large proportion of the parish council make it plain that a medical officer in the service of such a council must necessarily be a mere dependent, holding office under conditions which are hardly compatible with the position of a professional man. This system of providing medical advisers for sick paupers is evidently ripe for reform, and the Bill introduced in the House of Commons by Mr. Cathcart Wason, as mentioned in THE LANCET of March 21st, is a step in the right direction.

March 24th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Richmond Lunatic Asylum.

AT its monthly meeting on March 19th the joint committee of the Richmond District Asylum (Dublin) proceeded to the appointment of a resident medical superintendent in succession to the late Dr. Conolly Norman. At the meeting a report was submitted from a special committee of 21 members which had been appointed for the purpose of recommending changes in the staff consequent upon Dr. Norman's death. The resulting report included a minute to the effect that the vacant post should be filled by promotion from the staff and it was unanimously recommended that Mr. John O'Conor Donelan should be advanced to the position of resident medical superintendent, with the same authority and powers which had been given to the late resident medical superintendent, subject to the orders made by the joint committee regarding the responsibility of the various officers in connexion with the work assigned to them in their respective departments, and that Mr. Donelan's salary was to be fixed at £800 per annum, with house and other allowances estimated at £100 per annum. The committee further recommended that Mr. H. M. Cullinan, who had for many years been senior assistant at the Richmond Lunatic Asylum, should be promoted to the position of first medical officer at Portrane, at a salary of £600 per annum, with allowances similar to those given to Mr. Donelan. Some minor recommendations were also made regarding the subordinate members of the staff. The committee recommended no addition to the medical staff—making a special note expressive of a strong opinion "that the staff as now proposed ought to be sufficient to carry on the medical work of the institution, including annual leave." All the recommendations made were unanimous. The chairman, in moving the adoption of the report, after having referred in warm terms to the record of Mr. Donelan during the considerable number of years which he had spent in their service, pointed out that the readjustment which had been recommended by the special committee would effect a saving of nearly £600 per annum. The report was unanimously adopted.

Club (Contract) Practice.

Contract practice has not hitherto reached any considerable dimensions in Ireland, as it has done in the neighbouring island. Nor is it at all likely to as things go, either in the present generation or during the course of that next succeeding. There is, however, a somewhat similar arrangement in the club medical practice in Dublin, although this has not the wide prevalence of the analogous English growth which is now so characteristic of the large towns. Still, there exists a goodly proportion of club practice and club patients in the Irish metropolis, and the origin and survival thereof are due to very much the same source from which arises the crying evil of hospital abuse—the excess of professional supply over professional demand, with the jealousies and want of *esprit de corps* which flourish so readily in a profession of which the members can be subjected to no criterion of skill or attainments whereof the average public is qualified, as a body, to form anything approaching a just estimate. There are a good many clubs at present in Dublin the members of which pay an annual sum varying from 3*s.* to 5*s.* per annum, in return for which they receive medical and surgical advice, medical and surgical attendance at their homes, medical and surgical remedies and preparations required for the patient's use in every case of sickness, with medical, surgical, and obstetric advice, treatment, and medicine for all members of his family—in the case of every married member. It is, of course, quite superfluous to criticise the profit to either of the parties concerned in the fulfilment of this contract.

Epidemic Cerebro-spinal Meningitis.

It is announced that a special meeting of the Dublin corporation will shortly be held "to declare cerebro-spinal meningitis to be a notifiable disease for the period to the end of the 31st December, 1908, under the provisions of the Infectious Disease (Notification) Act, 1889." This is not due to any new or special apprehension. The conspicuously high death-rate of Dublin compared with that of the other large cities of the Empire makes the relatively easy escape which Dublin has had from cerebro-spinal meningitis a source of special satisfaction to the public health department for the conditions in Dublin have certainly been such as tended to make it a special focus of attraction for the germs of "spotted fever," a statement which is well borne out by the fact that the earliest description of "cerebro-spinal arachnitis" as a distinct clinical entity emanated from Dublin (in 1846).

Employers' Liability.

How very circumspectly employers must walk within the limits of the domain governed by the Employers' Liability Act has been sharply demonstrated by a decision that has just been given by the Recorder of Dublin. A gardener had had the sole of his foot penetrated to a slight depth by a dirty nail. Tetanus developed a few days afterwards and led to a fatal result. The bereaved widow sued the employer for damages under the recent Act of Parliament, and the latter had apparently not foreseen the almost boundless reach of the new law and had omitted the precaution to take out any inclusive policy of insurance. The Recorder, although apparently not devoid of sympathy with the employer's over-confidence, gave judgment in the widow's favour, with £150 damages, pointing out that the letter of the law absolutely forbade his taking any other course.

High Death-rate in Belfast.

For the week ended March 14th the death-rate from all causes was unusually high, 26·5, the mortality from chest affections alone being 12·3. The zymotic death-rate was only 1·9 and of this 1·5 was due to measles and whooping-cough, the death-rate for all the other infectious diseases being 0·4. There were on March 14th still 23 cases of cerebro-spinal fever in Purdysburn municipal fever hospital. It is a pity that the medical officer of health of Belfast attributes in his report the death-rate at present from chest affections in that city as being "entirely due to climatic conditions." This mortality was, as stated above, 12·3. Now at the same time in Edinburgh the total death-rate was only 17·3 per 1000 from all causes, and the climate of that city does not differ much from that of Belfast; indeed, most people who have lived in both places would say, from a chest point of view, that the climate of Edinburgh was the worse of the two towns. In 1862 the death-rate was from all causes in Edinburgh 25·88. In Belfast the latest returns give the death-rate from all causes as 26·5 and 12·3 from chest affections. What is the reason of the difference in the two places?

Queen's College, Belfast, Annual Dinner.

The annual dinner under the auspices of the amusements committee of the Students' Representative Council of Queen's College, Belfast, was held in the great hall on the evening of St. Patrick's Day, Dr. E. Letts (professor of chemistry) presiding. After the usual loyal toasts, Mr. A. B. Mitchell proposed "Queen's College, Belfast," pointing out the prominent part which it had played in the life of the country, to which the President (Rev. Dr. Hamilton) responded, saying that no matter what might befall the institution during the coming year they wanted room to do their work and to afford all classes of His Majesty's subjects, without distinction of creed or class, the benefit of a liberal education. Professor W. St. Clair Symmers proposed the toast of "The Queen's College Clubs and Societies," to which Mr. C. R. Crymble

(President of the Students' Representative Council) replied. Dr. J. W. Browne proposed "The Chairman," to which Dr. Letts replied.

March 24th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

An Accident and its Sequel.

ON Feb. 29th the driver of a tramcar was summoned before a magistrate's court to answer the following charge. Over a year ago, in January, 1907, the car which he was driving ran into a cab, the driver of which, a man called Chebance, was thrown to the ground. In his fall he sustained severe injuries and he died six months afterwards. His widow claimed 10,000 francs (£400) damages. The court held the car-driver responsible for the accident but it decided that expert evidence was necessary to discover whether the cab-man's death was really due to the injuries which he sustained in his fall. The judgment was an interesting pronouncement and I will quote from it, as it affords an excellent comment on the paragraph which I wrote last week about the professional scandal regarding certificates for compensation. The judgment is to the effect that the evidence shows a state of affairs that is all too common in accident claims—that is to say, the intervention of a commission agent, who by the exercise of a vivid imagination, backed by medical certificates, has tried to make the defendant pay compensation money, the ultimate destination of which is only too evident. This is clear from a study of the letter of claim written on April 3rd by the agent and signed by Chebance, to which a medical certificate is appended, with a letter in the same hand and signed by the widow, and with a third letter, dated Feb. 4th, 1908, also written by the same person, who this time, instead of getting the woman's signature, signed it outright "Widow Chebance" in his own hand, since it is obvious that the woman in question could not have written such a good signature. It is also suspicious that a cab-driver with hardly enough means to get properly looked after outside hospital could have afforded a consultation of two medical men, and in this connexion it must be remembered that the commission agent had intervened on the very first day. Taking these facts into consideration, the court has commissioned a medico-legal expert to take the evidence of the two practitioners who had medical charge of Chebance and to report whether his death on June 25th, 1907, was really the result of the accident in the preceding January.

Military Hygiene and Epidemiology.

The decree instituting a Supreme Commission of military hygiene and epidemiology, which is to last until 1914, has recently been slightly modified, as follows. The commission is to be composed of 20 members, one *ex-officio*, the Director-General of the Army Medical Service, and 19 to be nominated by the Minister of War. Among these 19 are to be the following: one senator, one deputy, two civil medical men chosen from the members of the Academy of Medicine, seven army surgeons, either surgeon-inspector-generals or surgeon-inspectors of the active or reserve forces, and a general officer of engineers.

The Adulteration of Drugs.

The Parliamentary Commission on Public Health has approved a Bill to repress fraudulent dealing in drugs. It provides for the regular inspection, not less often than once a year, of druggists' shops, surgeries of medical men and veterinary practitioners, pharmaceutical laboratories, herbalist and grocery shops, hairdressers' and perfumers' establishments, factories and stores of natural and artificial mineral waters, and in general all places where pharmaceutical or hygienic commodities are made, stored, or exposed for sale. Pharmacists, druggists, and all purveyors of pharmaceutical products will be liable to produce any of these which they may have on their premises for inspection by officers whose powers will be exactly laid down and who will be appointed by an order of the Public Administration.

The Roland Bonaparte Benefactions for Scientific Research.

At a meeting of the Academy of Science on March 2nd Prince Roland Bonaparte offered to put at its disposal the sum of 100,000 francs not to be invested as capital but in a series of annual grants to be awarded quickly. He wishes these grants to stimulate progress by helping the researches of workers who have already shown some promise by their original investigations but who, not being members of the Academy, are hampered by lack of funds in pursuing them. The Academy has decided that applicants must ask for the grants before Jan. 1st in each year, except in the present year, when May 1st will be the day. The successful applicants must during the ensuing year submit to the Academy a summary of the use that they have made of their subsidies and the results which they have obtained. If anyone who has received a grant fails to send in his report in the specified time he will be disqualified from any further aid from the fund. The Academy will have the sole right of publishing the discoveries that are made with the help of these grants, whatever form they may take. If this condition is transgressed the offender will forfeit any claim to a further subsidy.

Congress of Climatotherapy and Urban Hygiene.

This congress will be held at Biarritz from April 20th to 26th. The mornings of each day will be devoted to the reading of papers and the afternoons to excursions. On April 25th the congress will be held in Spain at San Sebastian, and on the following day it will meet at Arcachon. The meetings are open not only to medical men but also to anyone who is interested in the two subjects under discussion.

March 24th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Serum Diagnosis of Syphilis.

THE serum diagnosis of syphilis according to the methods devised by Dr. Bordet and Dr. Gengou of Paris and by Dr. Wassermann of Berlin was the subject of several papers read and discussed at meetings of the Berlin Medical Society on Feb. 19th and 26th and March 4th. Dr. Fleischmann said that the Bordet-Gengou reaction was of great value, as in 89 cases of syphilis with manifest symptoms a positive result was obtained; in 64 patients known to be syphilitic but not showing manifest symptoms the reaction was positive in 52 per cent. and in 38 cases of non-syphilitic persons it was negative. He considered that the reaction was of special importance when in certain cases symptoms have developed which were suspected to be of syphilitic origin, although there was no antecedent history of the primary stage of that disease. A positive reaction might be regarded as a certain proof that the patient was syphilitic. The result of the reaction might, moreover, be of value in deciding whether anti-syphilitic treatment was indicated or not. Dr. Blaschko gave a summary of 400 cases examined by himself and Dr. Julius Citron. In no instance did non-syphilitic patients suffering from eczema, psoriasis, balanitis, herpes, and cancer give a positive reaction. In some doubtful instances the result of the reaction, whether positive or negative, was always verified by the further development of the case. Observations made on 300 syphilitic patients gave the following results. During the primary stage the reaction was positive in 90 per cent.; during the secondary stage attended with obvious symptoms it was positive in 98 per cent.; during the secondary stage without characteristic symptoms it was positive in 80 per cent.; during the tertiary stage with obvious symptoms it was positive in 91 per cent.; and during the tertiary stage without characteristic symptoms it was positive in 57 per cent. Under anti-syphilitic treatment the positive reaction might sometimes become negative but in some cases it remained unaltered. Dr. Blaschko, however, stated that a positive reaction was not to be regarded as indicating an unfavourable prognosis. Many persons who had given such a reaction had nevertheless been to all appearance in good health for years, were married, and had healthy children. Obviously the positive reaction must spontaneously become negative after the lapse of some years. A positive reaction in patients who did not show characteristic symptoms was not an indication for a continuation or repetition of antisyphilitic treatment, because it often happened that even after prolonged treatment by Fournier's intermittent method the reaction remained positive. Dr. Citron read a paper on Modern Researches in Syphilis and their Value in Connexion with Treatment. He said that in recent times our knowledge of syphilis had been

advanced by three important observations, namely—(1) the discovery that syphilis might be communicated to the lower animals; (2) the discovery of the spirochæta pallida; and (3) the discovery of serum diagnosis, which might be performed by the method of agglutination or by the method of precipitation or by Wassermann's method of *Complement-bindung*. The last mentioned was, in Dr. Citron's opinion, the oldest and most trustworthy method and its usefulness was ascertained by clinical observation. Necropsies of persons who had given a positive reaction invariably showed that they suffered from syphilis although there might be no obvious clinical symptoms. A positive reaction was a certain proof of syphilis but a negative one did not exclude it. The following principles to be observed in the treatment of syphilis might be derived from the new discovery. If a primary chancre was present together with spirochætæ and a positive serum reaction antisyphilitic treatment should be begun at once and not postponed till the appearance of constitutional symptoms. The same course should be followed where there was a positive serum reaction without spirochætæ. In the case of a negative serum reaction with spirochætæ the chancre should be excised and general antisyphilitic treatment adopted. If the serum reaction was negative and no spirochætæ were found in the supposed chancre no specific treatment was necessary but the test by serum diagnosis should be repeated subsequently.

The Treatment of Rabies.

The report of the rabies department of the Institution for Infectious Diseases quoted in the *Sachverständigen-Zeitung* states that in the year 1905 there were 234 persons treated for rabies by Pasteur's method and that four of them died. In 67·6 per cent. the diagnosis was made by inoculating animals from the patients, whilst in the remainder it was made from the clinical symptoms only. Of the total number of patients 94 had been bitten by dogs, whilst five had contracted the disease from other persons. Of these five patients three were medical men and one was an attendant at a dissecting-room who became infected at a post-mortem examination; two other medical men had been bitten by dogs and so were four veterinary surgeons, whilst nine of them had been infected at post-mortem examinations of animals. Local treatment was adopted for 115 patients only. According to observations made in the institution it is very difficult to destroy the virus in the wound, even a short time after the receipt of the injury, so that in every suspected case the Pasteur treatment should be used as soon as possible. The treatment consisted in injections of solutions prepared from dried medulla for 21 days; in severe cases a second series of injections was commenced a month later and continued for a fortnight. All the patients were treated as out-patients. The four who died came under treatment on the second, third, sixth, and eleventh days respectively, so that in the two former the treatment was begun in good time. Death was probably due in these instances either to the advanced age of the patient or to a very short period of incubation. In the two other cases the late beginning of the treatment was probably the cause of the fatal issue. One patient who did not return for treatment after the first injection died three weeks afterwards, probably from rabies. Deaths of persons without treatment came to the notice of the institution in six cases, death occurring from one to four months after the injury. From the opening of the institution in 1898 till April 1st, 1906, there had been 2900 persons treated with 25 deaths. If, however, those who died before the end of the treatment or within two weeks afterwards were deducted the number of deaths is reduced to 13, giving a mortality of 0·448 per cent.

The Etiology of Psoriasis.

At a meeting of the Berlin Medical Society Dr. Nagelschmidt read a paper on the Connexion between Psoriasis and Affections of the Pancreas. He said that psoriasis was probably the result of a diathesis and there seemed to be a connexion between it and diabetes, for psoriasis was rather frequent in diabetic patients and conversely glycosuria was often present in sufferers from psoriasis. At a necropsy of a diabetic patient affected also with psoriasis he found cirrhosis of the pancreas. He accordingly prescribed pancreatin in psoriasis, the result being that eight out of 13 patients either recovered or were considerably relieved. Pigmentation of the skin remained after the treatment. Good results were, however, also obtained by the administration of an extract of the thyroid gland and of the testicle.

March 23rd.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

A Department of Health for Canada.

SIX years ago, in 1902, at the Montreal meeting of the Canadian Medical Association, a resolution was unanimously passed calling on the Dominion Government to consolidate the various medical services of the Dominion into one department under one of the existing Ministers of the Crown. Year after year that resolution has been reaffirmed at the annual meetings and a special committee on public health has repeatedly urged upon the Federal Government the feasibility and desirability of the proposition. As matters now stand the various medical services are scattered over five different departments, often necessitating confusion and much delay in health matters. On March 3rd the special committee on public health, accompanied by the medical members of the House of Commons and the Senate, waited on the Prime Minister and his colleagues. The way was open for a free discussion and presentation of the subject, as there had been held in the House of Commons an interesting debate on the subject on a motion introduced by Dr. Black, M.P., Windsor, Nova Scotia. Dr. Lachapelle, chairman of the Board of Health of the Province of Quebec, presented a memorandum on behalf of the association which, in addition to setting forth the above desired object, also called upon the Government to establish, equip, and maintain a national laboratory for the examination of vaccines, sera, &c. Addresses were delivered by Dr. Lachapelle, the convener of the special committee; by Dr. R. W. Powell, Ottawa, who had been for five years the convener of this committee; by the general secretary of the Canadian Medical Association, Dr. George Elliott, Toronto; by Dr. Schaffner, M.P., Manitoba, and by Lieutenant-Colonel Carleton Jones, M.D., Director-General of the Canadian Army Medical Services. In reply thereto the Premier, Sir Wilfrid Laurier, and the Hon. the Minister of Agriculture considered the plan a feasible one but that there might be some difficulties in the way. The matter is to come up for fuller debate later in the House of Commons.

Annual Report of the Provincial Board of Health, British Columbia.

In presenting his eleventh annual report, that for the year 1907, Dr. C. J. Fagan, the secretary of the Board of Health for the province, states that it is a better one than that of the previous year. On the subject of small-pox he stated that the disease had been present during the year in nine centres with 38 cases in all. In almost every instance the trouble was imported from the United States. He referred to bubonic plague, which had also appeared in the State of Washington, yet had gained no foothold in British Columbia. This probably has been due to the fact that British Columbia has established a laboratory for diagnostic purposes with Dr. Bapty in charge. Dr. Fagan states that the infection has been present in San Francisco for the past seven years and that it has spread to six or seven other places in the State of California. A point which has been established in British Columbia is that the rat flea is not the same as is found in England but is the true India rat flea. It has been further found, and this is contrary to English views, that the pulex cheopis infests both the brown and the black rat. Dr. Fagan refers at length to the medical inspection of schools and strongly recommends that public school teachers should qualify to impart instruction in sanitary science.

Conference on Tuberculosis in Ontario.

A conference on tuberculosis was held in Toronto on March 4th, having been convened at the instance of the National Sanitarium Association. His Excellency the Governor-General came from the capital to preside. Delegates were present from 44 municipalities of the province and from 17 counties. By a unanimous vote a motion was carried calling on the Ontario Government to increase the grants for the stamping out of tuberculosis throughout the province. Mr. W. J. Gage (Toronto), the founder of the National Sanitarium Association which now administers four sanatoriums, two in Muskoka and two at or near Toronto, delivered an address. In the course of his remarks he stated that the Ontario board of health returns for the past ten years showed that there had been over 30,000 deaths in the province from tuberculosis. There was encouragement in the fact that in the past seven years there

had been a decrease in the death-rate of 15 per cent. In the opinion of Mr. Gage the National Sanitarium Association had materially helped in this decrease. During the course of its deliberations the conference appointed a deputation to approach the Government and to solicit an increase from $1.50 a week for the patients to $5 per week. The Premier (Hon. Mr. Whitney) stated for his government that the proposition would receive at their hands more than ordinary consideration.

Hospitals and Charities in Ontario.

The report of the Inspector of Hospitals and Public Charities in Ontario for the year ending Sept. 30th, 1907, has been laid before the Ontario legislature now in session. There are now 65 hospitals in Ontario, four new ones having been established in the year—35 refuges, 31 orphanages, three homes for incurables, two convalescent homes, two Magdalen asylums, and 28 county houses of refuge, each of which shared in the Government grants. The hospitals have enjoyed a most successful and prosperous year and the total number under treatment during the year was 45,551, not including those who received medicine and treatment as outside patients. The expenditure of $1,415,140 for the support and maintenance of the hospitals of Ontario indicates a spirit of liberality that has never been equalled in any past year in the province. Referring to hospitals for consumptives the inspector in his report says that there is a necessity for some action being taken by the Government which will result in the establishment of sanatoriums in accordance with the Act relating thereto. In Ontario during the past year 2667 persons died from tuberculosis. The Government grant to every municipality establishing a sanatorium for the treatment of consumptives is $4000 and afterwards $1.50 a week is paid by the Government for each patient's maintenance while in residence. The municipalities in Ontario, however, have been slow to take advantage of the provisions of this Act, even though the many instances of consumption being cured in Ontario afford sufficient evidence to justify the establishment of these sanatoriums. The inspector found during the course of his visits of inspection to the various hospitals that want and suffering were particularly evident in immigrants newly arrived from the old lands and rather severely criticises the Federal Government with regard to its immigration inspection laws.

Annual Report of Montreal General Hospital.

At the annual meeting of the supporters of the Montreal General Hospital held on Feb. 18th there was announced a deficit of $20,000 for the year 1907. In referring to the work that this hospital has done in the last half-century the chairman of the board of governors said that in 1857 the number of indoor patients who received attendance in the wards of the hospital was 966, and in the outdoor departments, 4953, or a total of 5919, as against 54,187 for 1907. The number of patients who passed through the wards of the hospital in 1907 was 3347; out-patients numbered 50,840, being 3858 in excess of 1906. During the year an addition to the nurses' home had been completed at a cost of $16,623 and fire-proof galleries between the two surgical wards at a cost of $11,626. The income from all sources for the past year amounted to $105,907 and the expenditure to $124,738. To the endowment fund a total of $39,182 was added during the year, which brings that fund up to $137,182.

March 14th.

Obituary.

WILLIAM CLARKSON, L.F.P.S. GLASG., L.R.C.P. EDIN.

In the death of Mr. William Clarkson of West View, Morpeth, a striking personality has disappeared from the medical practitioners of Mid-Northumberland. A native of Wiston, in the upper ward of Lanarkshire, from its parish school he entered the University of Glasgow at an early age. He studied first in the arts classes and then entered on the study of medicine, obtaining several distinctions. Having taken the Licence of the Faculty of Physicians and Surgeons, Glasgow, in 1856, he held appointments and assistantships in several places both in Scotland and England. In 1865 he was elected surgeon to the dispensary at Morpeth. The success which attended his treatment of his cases during a simultaneous outbreak of small-pox and scarlet fever led to his obtaining several public appointments. He took the Licence of the Royal College of Physicians, Edinburgh, in 1874. Among the appointments which he held were medical officer of health of the borough of Morpeth, surgeon to the workhouse of Morpeth Union, Poor-law medical officer and vaccination officer to several large parishes in Morpeth Union, and medical officer of health to Morpeth rural district council, the area of which is one of the largest and most populous in the country, including then what is now said to be the largest colliery in the world, raised some years ago to the independent position of Ashington urban district with a vigorous council of its own managing the health affairs of a population of 20,000. He was also medical officer to Pegswood colliery. His reports as a medical officer of health were recognised by the profession and by the public as models of what such reports should be as to the use of admirable English, the precision of acute inference, and valuable suggestions. The reputation gained at the dispensary secured him an extensive private practice. Having retired from the position of medical officer of health of the borough he was elected to the town council and in 1888 was chosen as mayor. From all the other appointments he retired some years ago except those of Poor-law and vaccination officer for the parishes alluded to. These he retained until his death which occurred on March 6th in the seventy-ninth year of his age. In his latter less arduous years he frequently lectured on Scottish songs, especially on those of Burns and of the Jacobite era, illustrating his subject matter by singing appropriate songs in his own inimitable style. These lectures were always freely given on behalf of literary, charitable, or religious institutions.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Isaac R. Trimble, professor of anatomy and surgery in the College of Physicians and Surgeons, Baltimore.—Dr. Richard Douglas, formerly professor of gynæcology in the Vanderbilt University, Nashville.—Dr. Robert Luedeking, professor of children's diseases in the Washington University, St. Louis.

Medical News.

UNIVERSITY OF OXFORD.—Mr. H. R. Dean, B.M., B.Ch., New College, M.R.C.P. Lond., formerly Senior Demy of Magdalen College, has been elected to a Radcliffe Travelling Fellowship for three years.—The following degrees have been conferred:—

B.M., B.Ch.—Samuel Ernest Whitnall, Magdalen College.
B.Sc.—Harvey Sutton (M.B. Melb.), New College.

—The degree days for next term are as follows: Thursday, April 30th, at 10 A.M.; Saturday, May 23rd, at 2.30 P.M.; Thursday, June 18th, at 10 A.M.; Thursday, June 25th, at 10 A.M.; and Saturday, July 11th, at 10 A.M.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful in the subjects indicated:—

DEGREES OF M.B. AND CH.B.

Second Examination, Part A., Anatomy and Physiology.—A. Adams, A. Bamforth, J. E. Barnes, J. Campbell, A. A. Dear, E. S. Miller, Phœbe M. Powell, W. R. Wade, and T. W. Wadsworth.
Part B., Materia Medica.—H. el Arculli, T. C. Clarke, and W. F. Young.
Final Examination, Part I.—J. A. Parkes and A. A. Rees.
Part II.—A. C. Edwards, J. F. L. McCann, and A. M. M. Roberts.

DIPLOMA IN DENTAL SURGERY.

Second Examination.—G. P. P. Clapham.
Third Examination.—R. P. Allenby.

DIPLOMA IN TROPICAL MEDICINE.

A. M. Caverhill, M.B., Ch.B. Edin.; Major G. Dansey-Browning, R.A.M.C., M.R.C.S. Eng., L.R.C.P. Lond.; Major J. Davidson, I.M.S., M.D. Edin.; A. M. Dowdall, M.R.C.S. Eng., L.R.C.P. Lond. L. L. Joshi, M.D. Cornell Univ.; C. V. M. E. Le Fanu, M.B., Ch.B. Aberd.; C. W. L. Luethgen, M.B., Ch.B. Edin.; F. W. McCay, L.R.C.P. & S. Edin., L.F.P. & S. Glasg; Major G. W. Tate, R.A.M.C., M.B., B.Ch. Irel.; and R. Whyte, M.B., B.Ch. Irel.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—S. Speelman (Section II.), Amsterdam; and A. H. Turner (Sections I. and II.), Leeds.
Medicine.—E. J. Crew (Section II.), Guy's Hospital; H. E. Middlebrooke (Section II.), London Hospital; and A. H. Turner (Sections I. and II.), Leeds.

Forensic Medicine.—G. K. Aubrey, King's College Hospital; and A. H. Turner, Leeds.
Midwifery.—V. P. Norman, Durham; H. T. Roberts, St. Mary's Hospital; and A. H. Turner, Leeds.

The diploma of the Society was granted to the following candidate, entitling him to practise medicine, surgery, and midwifery:—A. H. Turner.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Heinrich Grabower has been appointed Professor of Laryngology.—*Budapest:* Dr. Michael Horvath has been recognised as *privat docent* of Orthopædic Surgery.—*Copenhagen:* Dr. Axel Trolle has been recognised as *privat-docent* of Gynæcology.—*Göttingen:* Dr. Heit Müller, Lecturer on Odontology, has been granted the title of Professor.—*Halle:* Dr. Mohr of Berlin has been appointed Extraordinary Professor of Medicine and Director of the Medical Policlinic.—*Jena:* Dr. Wilhelm Busse has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Leipsic:* Dr. Hieronymus Lange has been appointed Extraordinary Professor of Children's Diseases. Dr. Richard Seefelder has been recognised as *privat docent* of Ophthalmology.—*Odessa:* Dr. Joseph Pozhariski has been recognised as *privat-docent* of Pathological Anatomy.—*Pavia:* Dr. Alberto Ascoli has been recognised as *privat docent* of Physiological Chemistry.—*Prague (German University):* Dr. Eduoard Pietrzikowski has been appointed Extraordinary Professor of the Surgery of Accidents.—*Rome:* Dr. Ugo Lombroso has been recognised as *privat-docent* of Physiology.—*Rostock:* Dr. Johannes Müller has been appointed Extraordinary Professor of Physiology and Dr. E. Schwalbe of Karlsruhe, Professor of Pathology and Director of the Pathological Institute, in succession to Professor Thierfelder. Dr. E. Martini has been recognised as *privat-docent* of Anatomy.

SANATORIUMS FOR TUBERCULOSIS.—There was a large attendance of delegates from the various boards of guardians in Somerset at a conference held at Wellington on March 17th. Dr. J. Meredith read a paper entitled "The Provision of a County Hospital for the Treatment of Consumption," and after some discussion it was unanimously resolved that it was not desirable to provide a county hospital for this purpose.

COMPLIMENTARY DINNER TO SIR MALCOLM A. MORRIS.—An interesting dinner party took place on March 19th, at the Imperial Restaurant, Regent-street, London, when a number of the friends and colleagues of Sir Malcolm Morris, K.C.V.O., desiring to tender their congratulations on the honour recently conferred upon him by His Majesty, determined that a suitable occasion would arise while entertaining him as their guest. A party was therefore arranged numbering 35, including Mr. Frederick Morris, one of the sons of the guest of the evening. Dr. H. Radcliffe Crocker was in the chair. During the course of the evening, and after the King's health had been duly honoured, the chairman proposed the toast of their guest. He spoke of the friendly relationships which had existed for so many years among those especially interested in the study of dermatology in this country. In this connexion he referred to the good work done during the period of its existence by the Dermatological Society of London, now included in the Royal Society of Medicine. The result of the work of this society had been, he said, to advance the collective study of cutaneous diseases to an extent unequalled by any other agency, while it had fostered the growth of friendship among its members, of whom Sir Malcolm Morris had been one of the original. He then referred to the influence exerted in the advance of dermatology by Sir Malcolm Morris and to the high position which he occupied in the medical world generally, evidence of which was now clearly given by the recent gracious action of the King in knighting their guest. Dr. Crocker concluded by congratulating Sir Malcolm Morris "as a valued professional colleague and an esteemed friend, on behalf of all those present, upon the high honour conferred upon him by His Majesty." In his reply Sir Malcolm Morris referred to the growth and recent developments in the study of cutaneous medicine and to the valuable influences which had been exercised by the old Dermatological Society. The work of every one of its members had been laid before the others for criticism and for mutual instruction. It deserved in a special sense the epithet of a "College of Dermatology." He made mention in cordial terms of the peculiarly harmonious character of the comradeship of the members, adding that while he appreciated in the highest degree the personal character of the honour conferred upon himself, he preferred to look upon the King's act more from the point of view of a recognition of the position gained for dermatology as a branch of scientific medical study in this country than as a purely personal Royal favour. Dr. J. Mitchell Bruce proposed the health of the chairman in cordial terms, so bringing an interesting meeting to a conclusion.

THE PROPOSED UNIVERSITY FOR BRISTOL.—Sir F. Wills has again contributed £5000 to the fund for establishing a university in Bristol. This brings his contribution up to £10,000 and will found a chair in the new university.

MEDICAL MAGISTRATES.—The names of Mr. David John Thomas, M.R.C.S. Eng., L.R.C.P. Edin., of Nantymoel and Mr. Daniel Jenkins Thomas, M.D. Brux., L.R.C.P. Lond., M.R.C.S. Eng., of Bargoed, have been added to the commission of the peace for the county of Glamorgan.

NEW ISOLATION HOSPITAL.—The new small-pox hospital which has been erected for the Barry district in Glamorganshire at a cost of £4624 has just been completed. The cost of the building and maintenance is borne equally by the Glamorganshire county council and the Barry sanitary authority.

VACCINATION FEES.—For some months past vaccination has not been carried out by the Launceston board of guardians. The guardians adopted the reduced minimum fee of 3*s.* 6*d.* per case, and as the public vaccinators refused to accept these terms they were given notice to terminate their contracts and the matter was referred to the Local Government Board. At the last meeting of the guardians a letter was read from this authority stating that the fees should be as formerly—viz., 5*s.*, with the exception of the town of Launceston, in which the fees should be 3*s.* 6*d.*

ROYAL MICROSCOPICAL SOCIETY.—Lord Avebury, President of the Royal Microscopical Society, delivered the presidential address at a meeting held on March 18th. At the commencement of his discourse, which was entitled "On Seeds, with special reference to British Plants," he said that he would confine himself that evening to dicotyledons and that on the corresponding occasion next year he hoped to discuss the conifers and monocotyledons. He then proceeded to discuss various methods by which seeds were dispersed round the parent plant or conveyed to a distance or otherwise placed in conditions suitable for germination. Many seeds and fruits, he said, were provided with hooks which adhered to the bodies of passing animals, many seeds had downy attachments which enabled them to be carried by the wind, and many seeds were contained in elastic capsules which at the moment of bursting projected their contents to a considerable distance. Lord Avebury had made careful observations of the elastic capsules of the common wild *Geranium Robertianum* and had found that they could throw the seeds for a distance of 25 feet. Some capsules appeared to present phenomena of mimicry, simulating edible berries and caterpillars. Birds therefore picked them from the parent plant but after carrying them some distance discovered the deception and let them fall to the ground where they eventually germinated.

THE MEDICAL INSPECTION OF CHILDREN IN WEST SUSSEX.—There is ample evidence already that the duties imposed upon education authorities under Section 13 of the Education (Administrative Provisions) Act of 1907 will not be perfunctorily performed in West Sussex. The actual work has been commenced, much good has resulted, and if anything is necessary to show the great need of the new regulations is the fact that in one school alone the percentage of needy cases was as high as 50. The principal defects reported were defective eyesight, adenoids, and enlarged tonsils. It is felt that in many cases it will be necessary that there should be some agent, as it were, between the medical officer and the parents who would drive home to the parents the seriousness of the defects which have been found, their responsibility in the matter, and the advantage not only to the children but to themselves of having those defects remedied. And more particularly is the need of such an agent felt necessary in the cases of the poorest of the poor who are quite unable to bear any expense. In such cases the agent would be the means of securing hospital letters and the wherewithal with which the parent could take the child to a hospital or infirmary, perhaps many miles distant. The chairman of the West Sussex education

committee has issued a circular to all the correspondents of the council schools on the subject in the hope that some lady or gentleman in each parish will volunteer for the work outlined. The education committee may consider the desirability of having hospital collecting boxes permanently established in the schools and a periodical call made from the parents, through the children, in a similar manner as is being done now in very many business houses. Here would be the nucleus of a fund to assist in responding to the calls of the needy cases.

CARDIFF INFIRMARY.—At the meeting of the board of management of the Cardiff infirmary held on March 11th it was stated that there had only been one applicant for the post of house physician to the institution, and he had afterwards withdrawn his candidature. It was decided to advertise the appointment again.

THE annual general meeting of the governors and supporters of the Hospital for Women, Soho-square, London, W., will be held at the hospital on Thursday next, April 2nd, at 3 P.M., to receive the annual report of the committee of management and the audited accounts for the year 1907, and to elect governors and members of the committee of management and auditors for the ensuing year.

DONATIONS AND BEQUESTS.—The late Mr. George Harrison, of Manchester, bequeathed £10,000 to the Owens College for scholarships or fellowships, or such like purposes as the council of the college may direct, subject to the words "George Harrison" being always associated with the objects provided for by the bequest.—The following bequests have been made under the will of Mrs. Margaret Stern of East Barnet, Herts:—£1000 to the Manchester Royal Infirmary; £500 to the Owens College, Manchester; £250 to the Children's Hospital, Manchester; £500 to the German Hospital, London; and £250 to the Earlswood Asylum for Idiots.

THE LONDON BIBLEWOMEN AND NURSES MISSION.—The report for the year 1907 of the nursing branch of the London Biblewomen and Nurses Mission gives some interesting particulars of the useful work which this institution is carrying out by means of a body of trained hospital nurses who nurse the sick poor in their own homes in various parts of London under the name of the "Ranyard Nurses." During the year under notice the number of cases nursed was as follows: maternity, 1164; medical, 3951; surgical, 2784; cases not requiring daily visits, 623; total, 8522. Subscriptions and donations should be sent to the honorary secretary, Miss Andrews, at Ranyard House, 25, Russell-square, W.C., or to Lord Kinnaird, addressed to the Bank of Messrs. Barclay and Co., 1, Pall Mall East, London, S.W.

COMPLIMENTARY DINNER TO DR. A. NEWSHOLME.—On March 21st a thoroughly representative gathering of all sections of the townspeople of Brighton, as well as of the adjoining town of Hove, attended at the Royal Pavilion, Brighton, on the occasion of a banquet to Dr. Arthur Newsholme as a mark of appreciation of his work for Brighton during the 20 years that he was medical officer of health. When Dr. Newsholme's appointment as principal medical officer of the Local Government Board became known the medical profession in Brighton and Hove contemplated entertaining him at a banquet but it was soon found that it was the desire of even a wider circle than the medical profession that some such gathering should take place; hence the coöperation of the civic authorities and the medical profession. Following loyal toasts and the toast of "The Medical Profession," proposed by the junior Member of Parliament for the borough (Mr. E. A. Ridsdale) and responded to by Mr. H. H. Taylor and Mr. T. Jenner Verrall, the Mayor (Councillor J. P. Slingsby Roberts) submitted the toast of "Our Guest," recalling Dr. Newsholme's great work in Brighton from the year of his appointment as medical officer of health. Dr. Newsholme was given a hearty reception on rising to reply. He spoke of his work in different directions and the gratification it was to him to see the death-rate of the town fall from 18·7 to 14·7 per 1000. Apart from the occasional invasions of that deadly foe, influenza, he saw no reason why it should ever go higher. Referring to the ravages made by tuberculosis and the successful results attained from the system of curative treatment at the Brighton Sanatorium, Dr. Newsholme expressed the hope that the vigorous prosecution of the fight against consumpton would be continued. He believed that, if they did all that was possible, in 20 years consumption would occupy as small a place in the list of deaths in Brighton as enteric fever did at the present time. Dr. Newsholme paid a warm tribute to the work of those under him and expressed a hope that Dr. Duncan Forbes, his successor, would receive the same assistance as he had done.

WEST WALES SANATORIUM.—It is announced that Princess Christian will formally open the West Wales Sanatorium for Consumption at Alltymynydd on July 20th.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Royal Commission on Sewage Disposal.

A SUM of £4537 is provided in the Estimates for the expenses of the Royal Commission on Sewage Disposal during the year 1908–09. This Commission, it is stated in a footnote to the Estimates, was appointed in May, 1898, and has issued several interim reports. The Commissioners hope to present a report early in 1908 dealing with the relative merits of different systems of sewage disposal. The work which the Commission has already done on the purification of distillery refuse will probably also be dealt with in this report. An experimental investigation of the effect on streams of sewage effluents of varying degrees of purity has already been commenced for the purpose of enabling the Commission to formulate a series of standards and in its final report the Commission proposes to deal with this matter and also with the means available for purifying various kinds of trade effluents when not mixed with sewage.

The Royal Commission on Tuberculosis.

For the expenses of the Royal Commission on Tuberculosis a sum of £5491 is earmarked in the Estimates for the year 1908–09. This sum compares with £8664 during the last financial year. This Commission was appointed in 1901 to inquire with respect to tuberculosis whether the disease in animals and man is the same; whether animals and man can be reciprocally infected with it; and under what conditions, if at all, the transmission of the disease from animals to man takes place. The Commission was not appointed for any fixed period and the Commissioners state that it is impossible to say definitely when they will be in a position to give a final answer to all the terms of the reference, but every endeavour will be made to terminate the work in the course of the year 1908–09.

The Royal Commission on Vivisection.

In the Estimates of 1908–09 a sum of £850 is set apart for the expenses of the Royal Commission on Vivisection, as against £1058 in the financial year 1907–08. This Royal Commission was appointed in 1906, and according to the footnote to the Estimate it may be expected to last for the greater part of the financial year 1908–09.

Hospitals and Charities in Ireland.

A sum of £17,110 has been placed on the Estimates to pay charges connected with hospitals and infirmaries and certain miscellaneous charitable and other allowances in Ireland. Last year the estimate was £17,139.

The Poisons and Pharmacy Bill.

Five peers and five commoners are to sit on the Joint Committee of both Houses of Parliament which will consider the Poisons and Pharmacy Bill. The names of the peers are Lord SALTOUN, Lord STANLEY of ALDERLEY, Lord LAWRENCE, Lord MONK BRETTON, and Lord HAVERSHAM, and of the members of the House of Commons Mr. ATHERLEY-JONES, Mr. GODFREY BARING, Mr. IDRIS, Mr. VINCENT KENNEDY, and Sir JOHN BATTY TUKE.

Official Directory of Nurses Bill.

Lord BALFOUR of BURLEIGH has presented a Bill in the House of Lords to provide for the establishment of an official directory of nurses. It has been read a first time.

Another Pharmacy Bill.

Mr. WINFREY has introduced into the House of Commons a Bill to amend the Pharmacy Acts. The Bill has the support of Mr. IDRIS, Mr. HENNIKER HEATON, Mr. GULLAND, Mr. REMNANT, Mr. DOBSON, Mr. COWAN, Mr. CROOKS, Dr. VICKERMAN RUTHERFORD, and Mr. ELLIS GRIFFITH.

The Evidence of a Medical Officer of Health.

An unusual procedure had to be followed last week to procure the attendance of Dr. William Williams, the medical officer of health of Cardiff, at a sitting of a Select Committee of the House of Commons on a private Bill. The chairman of the committee, Mr. MOONEY, on March 18th made the following report to the House: "That the parties promoting the Glyncorrwg Urban District Council Bill had stated that the evidence of Dr. William Williams, medical officer of health, Cardiff, and Isaac Davies, of Abergwynfi, schoolmaster, was essential to their case; and, it having been proved that their attendance could not be procured without the intervention of the House, he had been instructed to move that the said Dr. William

Williams and Isaac Davies do attend the said committee to-morrow, at half-past eleven of the clock." The House thereupon made an order requiring the attendance of the two gentlemen.

The Funds of the General Medical Council.

The return of the receipts and expenditure of the General Medical Council and of the branch councils, and also of the receipts and expenditure of the Dental Registration Fund, for the year 1907 has just been presented to Parliament.

Tropical Diseases Research.

The report of the Advisory Committee for the Tropical Diseases Research Fund for the year 1907 has been presented to Parliament.

A Public Health Bill.

Mr. COOPER has presented a Bill in the House of Commons "to amend the Public Health Act, 1875, and the Local Government (England and Wales) Act, 1888." It has been read a first time.

HOUSE OF LORDS.

WEDNESDAY, MARCH 18TH.

Malta Fever.

Earl CAWDOR in his speech on naval matters incidentally asked the First Lord of the Admiralty what had happened to the goats in Malta through the agency of which Malta fever had been spread amongst the sailors of the fleet.

Lord TWEEDMOUTH, in reply, said that the goats in Malta still lived. It was their milk that spread the microbes. The way in which the naval authorities had got rid of Malta fever was by preventing the sailors and marines of the fleet from using any of the goats' milk. As a matter of fact the Malta goat lived in a very dirty manner. It fed on filthy garbage and consequently it was liable to get its milk contaminated.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 18TH.

Trained Nurses in Ireland.

Mr. CULLINAN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he would state what proofs of efficient teaching, of efficient examining, and of the possession of adequate *matériel* and of a capable and industrious staff the Local Government Board required before sanctioning any hospital for the training of nurses, whether trained or merely qualified; and whether they would take the medical profession generally into their confidence on those points.—Mr. BIRRELL replied (by written answer): Under the Local Government Board's Nursing Order, 1901, a trained nurse means any person who has resided for not less than two years in a general clinical or other hospital recognised by the Board and who, after examination, has obtained from such hospital a certificate of proficiency in nursing; and the term qualified nurse means any person who, after examination, has obtained a certificate of proficiency in nursing from any (1) public general hospital, or (2) workhouse infirmary and fever hospital, or (3) nursing institution, that may be recognised by the Board as an efficient school for medical and surgical nurses. The Board require, as evidence of the due training or qualification of a nurse, the production of the original certificate of proficiency from a recognised hospital. Before recognising for the purpose in question any hospital other than a general clinical hospital the Board make careful inquiries respecting such hospital. The Board have always received and welcomed assistance from the medical profession, both as regards the general question of recognition of the training of nurses and as regards the capacity for teaching of any particular hospital. It may be added that a general clinical hospital is one recognised by examining bodies for the instruction of medical students.

Proof Spirit in Temperance Drinks.

Mr. STAVELEY-HILL asked the Chancellor of the Exchequer whether he would state the number of samples of herb beer and other beverages sold as temperance drinks analysed at the Government laboratory during the past three years; the number found to contain more than 2 per cent. of proof spirit; and the percentage of proof spirit there disclosed.—Mr. ASQUITH, in reply, furnished the following tabular statement:—

Herb and Botanic Beer and similar Beverages examined in the Government Laboratory.

Year to March 31st.	Number of samples containing proof spirit in excess of legal limit of 2 per cent.	Containing proof spirit of—			Highest percentage of proof spirit contained in one sample.
		3 per cent., but less than 4 per cent.	4 per cent., but less than 6 per cent.	6 per cent. or more.	
1906	361	78	42	8	8·3 ginger beer.
1906	349	58	35	8	9·5 ginger beer.
1907	422	71	37	8	10·5 herb beer. 12·3 dandelion stout.
April 1st, 1907, to March 10th, 1908	417	81	32	6	8·5 herb beer.
Total	1549	288	146	30	—

The total number of samples examined in the year to March 31st, 1905, was 1011; in 1906, 924; in 1907, 1133; and from April 1st, 1907, to March 10th, 1908, 1079—a grand total of 4147.

THURSDAY, MARCH 19TH.

Medical Referees and the Workmen's Compensation Act.

Mr. ARTHUR HENDERSON asked the Secretary of State for the Home Department whether any case had been considered by the medical referees appointed under the Workmen's Compensation Act; and, if so, in what trade and with what result.—Mr. GLADSTONE replied: The total number of cases considered by medical referees in the six months from July 1st, 1907, the date on which the Workmen's Compensation Act, 1906, came into force, up to Dec. 31st, 1907, after which date figures are not yet available, is 117. The numbers in the respective branches of employment were as follows: Railways, 4; factories, 27; mines, 64; engineering, 2; building, 9; agriculture 3; not stated, 8. I cannot give the results, as the reports of the referees are not made to the Home Office but to the county court and other persons. Such information as is furnished to the Home Office is principally required for the proper payment of the fees. I should like to add that I do not think any trustworthy inference as to the working of the provisions of the new Act can be drawn from the results of the first six months of its operation.

Mr. WEDGWOOD: May I ask whether any steps are being taken to see that the medical referees have not previously been interested in the cases as certifying surgeons or otherwise?

Mr. GLADSTONE: Yes, steps have been taken.

Meat Inspection in Scotland.

Answering Mr. CATHCART WASON, Mr. SINCLAIR, the Secretary for Scotland, said: I am informed that there are six qualified veterinary surgeons in Glasgow who act as inspectors for inspecting cattle in public sale yards. Three act under the Diseases of Animals Act and three under the Public Health Acts. None of these inspectors have any official information from Dublin that cattle unfit for human food are sent to Glasgow to be consumed there. In all such cases, however, the carcasses of the animals are seized and destroyed.

In reply to a question put by Mr. MORTON, Mr. SINCLAIR said: There is no provision requiring local authorities in Scotland to see that animals exposed for sale in any market, whether provided with weighing machines or not, are inspected by a veterinary surgeon and certified as to their fitness for human food. There is no power to fix a standard of inspection, but on Oct. 19th, 1899, the Local Government Board for Scotland issued a circular suggesting that in the inspection of tuberculous carcasses of cattle the principle laid down in the report of the Royal Commission on Tuberculosis of 1898 should be followed. There is no intention to recommend any standard for the inspection of living animals.

Insane Persons and Marriage.

Mr. EDWARD DUNN asked the Prime Minister whether he was aware that, according to a recently published report of the Commissioners in Lunacy, of 123,938 persons certified as incurably insane in England and Wales over 40 per cent. were married, and that consequently upwards of 57,000 persons were thus condemned by law to enforced celibacy; and whether, having regard to the fact that the greater number of such persons were in poor circumstances and to the evils arising from the existing state of the law he would afford facilities for the consideration of the Bill for the amendment of the present law of divorce.—Mr. ASQUITH (in the absence of Sir HENRY CAMPBELL-BANNERMAN) replied by written answer: My right honourable friend has asked me to answer this question for him. The number of persons certified to be insane and known to be under care is, I understand, as stated. Of the males so certified the official statistics show that 47·6 were married and of the females 45 per cent. These persons, however, are not certified as incurably insane and a proportion of them recover. The Government cannot undertake to afford facilities for the consideration of the Bill for the amendment of the present law of divorce.

FRIDAY, MARCH 20TH.

Housing of the Working Classes in Ireland.

Mr. HOGAN, in moving the second reading of the Housing of the Working Classes (Ireland) Bill, explained that the measure was designed to facilitate the granting of loans for the erection of houses for the working classes in the cities and towns of Ireland and also for improving the administrative machinery in connexion with this question.

Mr. CLANCY, in supporting the motion, said that one was appalled by the state of the housing of the working classes in all the cities and towns in Ireland. In Dublin the state of things amounted to a national scandal. There, in 1903, out of 70,000 families there were no fewer than 21,747 families living in one-room tenements. Comparing the condition of affairs in Ireland with that in England and Scotland he said that in Manchester there were 0·04 per cent. of one-room tenements having five or more occupants, in Liverpool 0·22 per cent., in London 0·57 per cent., in Edinburgh 1·80 per cent., in Glasgow 3·28 per cent., while in Dublin there were 8·69 per cent. Overcrowded as Glasgow was it was still not so bad as Dublin. Local authorities were being urged to build sanatoriums all over the country, but what earthly use was it to erect sanatoriums if they allowed these breeding haunts of consumption to exist by the thousand in Dublin and by the hundred in small centres of Ireland? If the satisfactory housing of the people was not carried out more rapidly in the future than it had been during the last 30 years then the prospect was one to make his heart sink within him. He did not suppose that any objection to the provisions of the Bill would be taken except with respect to the money clauses.

Mr. LONSDALE, in the course of the debate, said that the Ulster Members were in favour of improving housing for the working classes in Ireland which would promote the welfare of the whole people. There had been great improvement but further financial aid from the State as proposed by the Bill was required. The census figures showed that there was still much overcrowding, especially in Dublin where in 1901 40·6 per cent. of the population occupied overcrowded dwellings. Belfast, on the other hand, had only 8·28 per cent. of its population in overcrowded conditions. Correspondingly the death-rate was lower in Belfast than in Dublin. While he cordially supported the principle of the Bill he thought that some of the novel provisions required such careful consideration that he suggested the measure should be referred to a Select Committee.

Mr. BIRRELL (Chief Secretary to the Lord Lieutenant of Ireland), replying to the debate, said that it would be impossible for the House to refuse a second reading to a measure which had received such happy and unusual support from all quarters of the House. The city of

Glasgow, energetic and magnificent as indeed it was, had long enjoyed an unenviable reputation in this matter, but he did not think it had yet been brought home sufficiently to the minds of people in England and Scotland that the condition of the city of Dublin was twice as bad. The difficulty of dealing with the subject of the Bill arose from the poverty of Ireland. The towns had already borrowed pretty well up to their legal powers and the rates were oppressive. He therefore agreed that the financial proposals of the Bill would require consideration.

The motion for the second reading was ultimately agreed to without a division.

MONDAY, MARCH 23RD.

Tuberculosis in Ireland.

Mr. FRENCH asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that the New Ross urban district council passed resolutions to the effect that all cases of pulmonary consumption should be notified, that there should be more stringent and uniform measures for the regulation of milk and food supplies, that county councils should be enabled to erect and maintain hospitals, sanatoria, and dispensaries for the treatment of consumption, and that there should be a system of medical inspection of schools and school children; and whether he could hold out any hope of legislation in the direction indicated.—Mr. BIRRELL answered: I have received several resolutions on this subject. The Tuberculosis Prevention (Ireland) Bill which I am to introduce will contain a clause providing for the compulsory notification of tuberculosis and will also deal with the official supervision of dairies and the sale of food. As to the medical inspection of schools I would refer to the answer given to the honourable Member for South Down on Feb. 26th.

TUESDAY, MARCH 24TH.

Lead Poisoning.

Mr. ALDEN asked the Secretary of State for the Home Department whether he was aware that during the months of January and February of this year there were 17 cases of lead poisoning in the china and earthenware industry, as against ten for the same two months of 1907; that seven out of the ten persons affected by lead poisoning during the month of February this year were females; whether he could inform the House as to the number of china and earthenware factories represented by these cases; and how many of these cases had resulted in death.—Mr. GLADSTONE replied: The figures quoted by my honourable friend are correct. The 17 cases occurred in 14 factories and one of them was fatal. I am appointing a committee to make a further inquiry with regard to lead poisoning in this industry.

The Children's Bill.

The LORD ADVOCATE (Mr. SHAW) moved the second reading of the Children's Bill. He explained its provisions, which have already been indicated in THE LANCET. The Bill, he mentioned, dealt with the overlying of children and the figures relating to this evil were of an appalling character. A part of the Bill which might cause a little trouble was the portion which related to juvenile smoking. He confessed that when he first read the clauses he thought that the Government was going somewhat far. He had now gone fully into the records of the investigations conducted under the authority of the Crown and he found that the evil was of a most serious kind. The report of the Royal Commission on Physical Training showed that tobacco smoking before maturity was reached had a most prejudicial effect upon physical development. This evil could not be too strongly denounced. The Government had done something to meet it in the Bill and he hoped that the House would assent to the clause dealing with it.

Mr. AKERS DOUGLAS, as Home Secretary in the last Government, expressed himself as in general sympathy with the Bill.

In the course of the subsequent debate, Mr. RAWLINSON criticised the clauses relating to the penalties proposed to be imposed in cases where children were burnt when left with access to unguarded fires and also in cases of the overlying of infants. The House ought not to make an act a criminal act unless the person doing it had a criminal intention. He also criticised the machinery of the clauses dealing with juvenile smoking.

Mr. H. SAMUEL, Under Secretary of State for the Home Department, defended the Bill. Public opinion generally approved of the clauses relating to the deaths of children from unguarded fires and from overlying. The Government would be very sorry to give up these clauses. As to juvenile smoking, he defended the provisions of the Bill, and although no law might suppress the evil finally, still it was necessary for the discipline of the State to step in where that of the home was absent. He firmly believed that the provisions of the Bill would do much to put down a practice which had been condemned by medical men.

The debate was adjourned.

WEDNESDAY, MARCH 25TH.

Medical Inspection of School Children in Ireland.

Mr. JOHN REDMOND asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been called to a statement recently made by the President of the Board of Education to the effect that the Education Department were prepared to recommend to the Treasury that provision should be made in the coming financial year for the medical inspection of children attending schools, and that this provision should be made in the form of a special grant; and whether he intended to take steps to have a similar procedure followed and a similar grant made in connexion with medical inspection of schools in Ireland, and more especially with regard to the medical inspection of the eyesight of children.—Mr. BIRRELL replied: My right honourable friend the President of the Board of Education informs me that the newspaper report to which the honourable gentleman evidently refers contains a very material mistake. My right honourable friend did not say that he was prepared to make the recommendation in question to the Treasury. What he said was that he was asked to make that recommendation, and the sense of his reply is shown in a subsequent passage of his speech in which he asked the deputation not to press him to go to the Chancellor of the Exchequer for the ensuing year, for in the first place he thought it would be a mistake to introduce any special grant at a moment when they were anxious to get rid of special grants, and secondly he feared that the Chancellor of the Exchequer would not be able to meet their demands at present having regard to the existing claims that were made upon him.

BOOKS, ETC., RECEIVED.

APPLETON, SIDNEY, London.

Modern Clinical Medicine. Diseases of the Nervous System. Edited by Archibald Church, M.D., Professor of Nervous and Mental Diseases and Medical Jurisprudence, North-western University Medical Department, Chicago, Illinois. An authorised translation from "Die Deutsche Klinik," under the general editorial supervision of Julius L. Salinger, M.D. Price 22s. net.

Anatomy of the Brain and Spinal Cord, with Special Reference to Mechanism and Function. For Students and Practitioners. By Harris E. Santee, M.D., Ph.D., Professor of Anatomy in the College of Physicians and Surgeons, Medical Department, University of Illinois; Professor of Anatomy in Jenner Medical College, Chicago; Member of Association of American Anatomists. Fourth edition, revised and enlarged. Price 16s. net.

Manual of Diseases of the Ear, Nose, and Throat. By John Johnson Kyle, B.S., M.D., Professor of Clinical Otology, Rhinology, and Laryngology in the Medical College of Indiana, Department of Medicine of Purdue University. Second edition, revised and enlarged. Price 12s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent-garden, London, W.C.

A Text-book of Pathology. With an introductory section on Post-mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D., Emeritus Professor of the Practice of Medicine, College of Physicians and Surgeons, Columbia University, New York, and T. Mitchell Prudden, M.D., LL.D., Professor of Pathology and Director of the Department of Pathology, College of Physicians and Surgeons, Columbia University, New York. Eighth edition. Price 25s. net.

Meat and Food Inspection. By William Robertson, M.D. Glas., D.P.H., Medical Officer of Health, Leith. Price 10s. 6d. net.

CHURCHILL, J. AND A., 7, Great Marlborough-street, London, W.

The Labyrinth of Animals, including Mammals, Birds, Reptiles, and Amphibians. By Albert A. Gray, M.D. Glas., F.R.S.E., Surgeon for Diseases of the Ear to the Victoria Infirmary, Glasgow. Volume II. Price 25s. net.

F. A. DAVIS COMPANY, 1914-16, Cherry-street, Philadelphia, Pa., U.S.A.

Personal Hygiene in Tropical and Semi-Tropical Countries. A Popular Manual, Written for the Use of Foreigners Residing in the Phillippines, Cuba, and Other Portions of the Tropics. By Isaac Williams Brewer, M.D., Member of the American Society of Tropical Medicine. Price $1·00 net.

GARDEN CITY PRESS, LIMITED, Letchworth, Herts.

Practical Housing. By J. S. Nettlefold, Chairman, Birmingham Corporation Housing Committee; Chairman, Harborne Tenants, Ltd. Price 1s. net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Green's Encyclopedia and Dictionary of Medicine and Surgery. Vol. VII., Nerlin—Physiology (Tissues). Price 15s. net.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.

Text-book of Ophthalmology. By Dr. Ernst Fuchs, Professor of Ophthalmology in the University of Vienna. Authorised translation from the eleventh revised and greatly enlarged German edition, with numerous additions. By Alexander Duane, M.D., Surgeon, Ophthalmic and Aural Institute, New York. Third edition. Price 25s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BAYLEY, ERIC, M.D., B.S. Lond., F.R.C.S. Eng., has been appointed Co-Divisional Surgeon to Police of G Division stationed at City-road, London.

COPE, V. ZACHARY, M.D., B.S. Lond., has been appointed Surgical Registrar to the London Temperance Hospital.

EDWARDS, ALBERT DAVIES, M.B., B.S. Lond., D.P.H. Edin., has been appointed Assistant Medical Officer and Assistant Schools Medical Officer by the Newport (Mon.) Education Committee.

EVANS, THOMAS, M.B. Lond., has been appointed a Medical Inspector of School Children for the County of Glamorgan.

GILES, JAMES A., M.B., B.S. Durh., has been appointed Assistant Medical Officer of Health of the County Borough of Devonport.

GRIMBLY, RICHARD HENRY, M.R.C.S., L.S.A., has been appointed Medical Officer for the Ipplepen District by the Newton Abbot (Devon) Board of Guardians.

HOWARD, RUSSELL, M.S. Lond., F.R.C.S. Eng., has been appointed Curator of the Museum of the London Hospital Medical College.

JONES, EDITH ANNE, M.B., B.S. Lond., has been appointed a Medical Inspector of School Children for the County of Glamorgan.

LANYON, GEORGE EDWARD, M.B., C.M. Edin., has been appointed Medical Officer of Health for the Falmouth and Truro Port Sanitary Authority.

MARGAREY, RUPERT E., M.B., B.S. Adelaide, has been appointed Clinical Assistant to the Chelsea Hospital for Women.

MILL, G. ROBERTSON, M.D. Edin., has been appointed Honorary Anæsthetist to the Liverpool Dental Hospital.

RICHMOND, D. S., M.B., Ch.B. Glasg., has been appointed Medical Officer and Vaccinator to the Parish of Dalry, Kirkcudbrightshire.

SPICER, R. H. SCANES, has been appointed Honorary Consulting Surgeon for Throat Diseases at St. Mary's Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERDARE, URBAN DISTRICT COUNCIL EDUCATION COMMITTEE.—School Medical Officer. Salary £220, rising to £250.

AYR DISTRICT ASYLUM.—Junior Assistant Medical Officer. Salary £120 per annum, with board, lodging, and laundry.

BEDFORD COUNTY HOSPITAL.—House Physician. Salary £60 per annum, with apartments, board, and laundry.

BIRMINGHAM AND MIDLAND FREE HOSPITAL FOR SICK CHILDREN.—Resident Medical Officer, also Resident Surgical Officer. Salary in each case £80 per annum, with board, washing, and attendance.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary £100 per annum, with apartments, board, and laundry.

CAMBRIDGE, BOROUGH OF.—Medical Officer of Health. Salary £500 per annum.

CAMBRIDGESHIRE, &C., ASYLUM, Fulbourn.—Second Assistant Medical Officer, unmarried. Salary £120 per annum, with board, lodging, and attendance.

CANTERBURY BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £140 per annum, with board, lodging, washing, and attendance.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—House Surgeon. Salary at rate of £50 per annum, with board and residence. (Incorrectly given last week as £70 per annum.)

CHELSEA GUARDIANS.—Medical Officer for No 3 Relief District. Salary £100 per annum and fees.

CHELTENHAM GENERAL HOSPITAL.—House Physician, unmarried. Salary £70 per annum, with board and lodging.

CHESHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Two Assistants to the Medical Officer of Health. Salary in each case £350 per annum and travelling expenses.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £50 per annum, with board, washing, and residence. Also Clinical Assistant.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Physician to Out-patients.

DERBYSHIRE, DEVONSHIRE HOSPITAL, Buxton.—Assistant House Surgeon. Salary £70 per annum, with apartments, board, and laundry.

DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL, Adelaide-road.—House Surgeon. Salary £40 per annum, with board and residence.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon, also Assistant House Surgeon. Salaries £80 and £40 respectively, with board and lodging.

EAST SUFFOLK COUNTY EDUCATION COMMITTEE.—School Doctor. Salary £350 per annum, with out-of-pocket expenses.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board and washing.

EDINBURGH DISTRICT ASYLUM, Bangour Village.—Second Assistant Physician, unmarried. Salary £120, with board, apartments, and laundry.

EGYPTIAN GOVERNMENT, KASR EL AINY HOSPITAL.—Resident Surgical Officer. Salary £250 per annum, with quarters, servants, washing, coal, and light.

GROCERS' COMPANY.—Two Scholarships for Research in Sanitary Science value £300 a year each, with allowance to meet the cost of apparatus and other expenses.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with residence, board, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Salary £25.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon for six months. Salary £20. Also House Physician for six months. Salary £20. Also Assistant Casualty Medical Officer for six months. Salary £20. All with board and residence.

HOSPITAL FOR WOMEN, Soho-square, W.—Resident Medical Officer for six months. Salary at rate of £60 per annum.

IPSWICH, EAST SUFFOLK AND IPSWICH HOSPITAL.—Senior House Surgeon. Salary £80 per annum.

KING'S COLLEGE HOSPITAL.—Senior Medical Registrar and Tutor.

LEYTON URBAN DISTRICT COUNCIL.—Assistant Medical Officer of Health. Salary £250 per annum, rising to £300.

LIVERPOOL DISPENSARIES.—Assistant Surgeon, unmarried. Salary £100 per annum, with board and apartments.

LONDON FEVER HOSPITAL, Liverpool-road, N.—Assistant Resident Medical Officer. Salary £150 per annum, with residence and board.

LONDON SCHOOL OF TROPICAL MEDICINE, Royal Albert Dock, E.—Cragg's Research Prize. Value £50.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £60 per annum, with board, residence, and washing.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, lodging, and washing.

MIDDLESEX COUNTY ASYLUM, Upper Tooting, S.W.—Fourth Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

MIDDLESEX HOSPITAL, W.—Assistant Obstetric Physician. Also Second and Third Assistants to the Director of the Cancer Research Laboratories. Salary of Second Assistant £150 and Third Assistant £100 per annum.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.—Registrar. Salary £150 per annum.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—School Medical Officer. Salary £400 per annum and travelling expenses.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon, also Assistant House Physician. Salary in each case £60 per annum, with board, lodging, and washing.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £30 per annum, with rooms, commons, and washing.

ROYAL NAVY, MEDICAL DEPARTMENT.—Examination for not less than 15 Commissions.

ST. GEORGE'S UNION, London.—Medical Officer. Salary £100 per annum, with fees.

SEAMEN'S HOSPITAL SOCIETY, Greenwich, S.E.—Two House Physicians and Two House Surgeons. Salary in each case £50 per annum, with board, residence, and washing.

SHEFFIELD EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £250 per annum, rising to £300.

SHREWSBURY, SALOP INFIRMARY.—House Surgeon. Salary £100 per annum, with board, washing, and residence. Also House Physician for six months. Salary at rate of £50 per annum, with board and apartments.

SOUTH UIST (Southern Division).—Medical Officer. Salary £77 10s.

SOUTHWARK UNION INFIRMARY, East Dulwich-grove, S.E.—Assistant Medical Officer. Salary £100 per annum, with board, lodging, and washing.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months, renewable. Salary at rate of £70 per annum, with residence, board, and washing.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon. Salary £82 per annum, with board, residence and laundry.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—House Physician. Salary £100 per annum, with apartments, board, and washing.

SURREY COUNTY COUNCIL EDUCATION COMMITTEE.—Four Assistant Medical Officers. Salary of each £250 per annum, with expenses.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Resident Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and laundry.

WALSALL, EDUCATION COMMITTEE FOR THE COUNTY BOROUGH.—School Medical Officer. Salary £200 per annum.

WARRINGTON, COUNTY BOROUGH OF.—Assistant Medical Officer of Health. Salary £125 per annum, with board and residence.

WEST HAM COUNTY BOROUGH EDUCATION COMMITTEE.—Two Medical Inspectors of School Children. Salary £250 per annum, rising to £300 in each case.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

WORCESTER GENERAL INFIRMARY.—House Surgeon. Salary £80 per annum, with board, residence, and washing.

WORCESTERSHIRE, BARNSLEY HALL ASYLUM, Bromsgrove.—Second Assistant Medical Officer. Salary £150 per annum, with quarters, board, washing, and attendance.

WORCESTERSHIRE EDUCATION COMMITTEE.—Inspector of School Children and Midwives. Salary £400 per annum, with travelling expenses. Also Two Assistant Inspectors. Salary £175 per annum, with travelling expenses.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Doneraile, in the county of Cork; at Turriff, in the county of Aberdeen; at Erith, in the county of Kent; at Lynton, in the county of Devon; at Worthen, in the county of Salop; and at Loftus, in the county of York.

Births, Marriages, and Deaths.

BIRTHS.

BENNETT.—On March 21st, at Hillcrest, Northwood, the wife of Norman G. Bennett, M.A., M.B., B.C., L.D.S., of Brook-street, Grosvenor-square, W., of a daughter.

LEE.—On March 21st, the wife of Fredk. W. Lee, M.R.C.S., L.R.C.P., of Southdown House, Storrington, Sussex, of a son.

LEE.—On March 19th, at 45, Muswell-rise, the wife of William Edward Lee, M.D., F.R.C.S., of 45, Muswell-rise, N., and 36, Finsbury-pavement, E.C., of a son.

MARRIAGE.

DICKSON–MCLAGGAN.—On March 25th, at St. John's Church, Buxton, by the Rev. C. C. Nation, M.A., R.D., Vicar, Francis Henry Dickson, M.B., Ch.B. Edin., of 37, Holywell-street, Oxford, youngest son of the late Francis Kennedy Dickson, F.R.C.P. and F.R.C.S., J.P., to Margaret Sophia McLaggan, eldest daughter of the late Alexander McLaggan, of Bombay, and of Mrs. McLaggan, of Lake Chrissie, Transvaal.

DEATHS.

ABUD.—On March 23rd, at Mount Park-road, Ealing, Richard Abud, M.R.C.S. Eng.

ATTFIELD.—On the 23rd March, at San Remo, Italy, in his forty-second year, after suffering for five years from consumption and recently influenza, Donald Harvey Attfield, M.A., M.B., formerly Medical Officer of Health at Watford, and afterwards for several years Chief Maritime Medical Officer of Health for the Egyptian Government at Suez; son of Professor Attfield, F.R.S., of Watford. Friends please accept this, the only, intimation.

LORIMER.—On March 25th, at Nelson House, Nelson-street, Oxford-road, Manchester, George Lorimer, M.A., M.D. Edin., of Buxton, son of the late Rev. Archibald Lorimer of Cockenzie, N.B. Deeply regretted. Friends please accept this, the only, intimation.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE TITLE OF DOCTOR.

In the course of an action recently heard in the Probate, Divorce, and Admiralty Division, a barrister appears to have addressed the following questions to a medical man:—

Q. What are your qualifications, Sir?
A. L.S.A. Lond., and also an M.A. Cambridge.
Q. Are you a doctor, Sir?
A. Most certainly.

The barrister, who was cross-examining, probably meant to be offensive, in which connexion it may be remembered that a member of the Bar recently said to a Licentiate of the Society of Apothecaries whose evidence he wished to discredit, "You hold the lowest degree in medicine." But we are not concerned so much with the barrister's manners as with the inability of an educated man to see that the title of doctor has two significances. Academically it belongs only to those who possess a doctorate granted by a recognised University; popularly it belongs to all medical men. Having asked the witness what his qualifications were, the further question was unnecessary unless the barrister wished to involve the witness in some dispute the outcome of which might be that the jury would fancy that the witness was claiming some title to which he had no right. We think that members of the Bar might master the differences between a degree and diploma and between the formal and colloquial usage of the title of doctor, while they might also remember that medical men do not possess their statutory right to give medical evidence because they possess this or that qualification, but because their names are on the Medical Register, after pursuing a course of studies which is satisfactory to the General Medical Council.

A COINCIDENCE IN INVENTION.

To the Editor of THE LANCET.

SIR,—In your issue of March 14th there appears a letter from Mr. H. R. Davies under the above heading. It refers to the similarity existing between a pessary invented by him in 1900 and one described by me in your issue of March 7th. He is correct in saying that they are to all intents and purposes identical, and indeed, so far as I can judge from the illustrations of his instrument, the only distinctive feature is that his instrument is composed of vulcanite throughout, whereas mine consists of a steel stem and bars supporting either an ordinary watch-spring or vulcanite ring, the object in this being that the more perishable ring portion may be replaced as frequently as required without the necessity of purchasing an entire new instrument.

I may add that I was in total ignorance of the existence of Mr. Davies's pessary when I had mine made, and also that I consulted several surgical instrument catalogues in search of an adequate pessary for the class of case I had to treat, but without finding any of the kind I required.

If I had known of Mr. Davies's pessary I should certainly have used it, and I congratulate him sincerely on the invention of his instrument.

I am, Sir, yours faithfully,
SEYMOUR STRITCH,
The Governor, the Apothecaries' Hall, Ireland.

Dublin, March 23rd, 1908.

THE FUTURE OF THE TELEPHONE SERVICE.

A QUESTION which is now exercising the public mind is that of the future of the telephone service, and although the "commercial" community is most directly interested, because the points at issue do not materially affect the medical profession, at the same time the use of the telephone is becoming so universal among medical men that many of our readers ought to know the pros and cons of the question. The administrators of the telephone services have in contemplation the doing away entirely with the "flat-rate" system—the payment of a fixed sum for an unlimited number of calls, and the substitution wholly of the "message-rate" system—the payment of a fixed sum for each call made. This latter system was more or less introduced some few years ago when the Post Office service was inaugurated. The authorities now claim that the enormous increase in the number of telephones compels them to do away with the "flat-rate" system, so as to secure the efficient working of the service, in the interests of telephone users themselves. Much opposition is being manifested towards the proposed change by chambers of commerce and large commercial houses on the ground that such a change would be a tax on trade and commerce, but the matter hardly strikes us in this way, while the "flat-rate" system is certainly a tax on the time and temper of the public. Anyone who has experience of "calling up" any of the large trading concerns knows only too well how persistently the reply is "line engaged," the line being blocked with outward calls. This nuisance is becoming increasingly grievous and is brought about by the systematic overloading of their lines by short-sighted users who will not put in the additional lines which they clearly require. Fortunately, most of the large wholesale houses with which the medical profession have to do business have long since recognised the futility of overloading their lines and have doubled and trebled them, one large firm of manufacturing chemists in particular having six lines running into their City premises. This is as it should be, because it makes for an efficient service, and an efficient service must in the long run be the least expensive service. Above all, it practically eliminates the "engaged" call—the worst feature of the present service. For the great majority of medical men—we should think for all of them—the "message-rate" system is sufficient, and whilst its cost is at present much too high it is obviously cheaper for them than the "flat-rate" system. We incline to the opinion that the "message-rate" system, fixed on an equitable basis, which should not exceed £3 3s. for the minimum service, is the better system: it is a system by which the user pays in proportion to service rendered, while it prevents the abuse under which some users pay an annual subscription greater than it should be because other users on a "flat-rate" or unlimited system do not pay their due share.

EXCESSIVE SMOKING BY A YOUTH.

To the Editor of THE LANCET.

SIR,—To break the cigarette habit in a youth there is nothing better than peppermint drops. He cannot smoke with a "bull's-eye" in his mouth, and even for some time after it is dissolved tobacco will not blend kindly with the taste that remains. Socially the cure may seem worse than the disease, but from a medical point of view the sucking of pepperminta is far less hurtful. A common "bull's-eye" will prevent smoking for nearly an hour, so the amount of sweets used need not be great. It would be a good plan to insist upon the youth who will smoke making his own cigarettes without the aid of a machine. Few will smoke to excess if they have to make their own cigarettes.

I am, Sir, yours faithfully,
Silverton, March 24th, 1908. O. CLAYTON JONES.

A TURKISH PERMIT FOR BURIAL 100 YEARS AGO.

"THE following," writes Dr. J. Cropper of Chepstow, "was given me as a literal translation of a Turkish permit for burial. It is 100 years old and was translated for me by an Arab medical man (qualified in Beyrout) as a specimen of the treatment meted out to the 'dog of a Christian' in the old days when it was not permitted to such to carry a walking stick or to walk to the right of a Moslem when passing in the street. The growth of Western ideas and not less the influence of Christian medical missions has altered much of this and the cursing of Christians is now chiefly left to children and small boys who still often 'take the change' out of travellers."

[TRANSLATION.]

From the Most High Court, &c., &c.

Seeing that a petition has been presented by the Bishop of the infidels on behalf of the deceased [here follows his name], and as he has perished and we know that if he is left unburied his smell will pollute the air breathed by the true Believers, we give hereby permission for him to be buried in their well-known dung hill and to go to his company in Hell.

[Here follow the seals of the signatories.]

"PINOMED" HANDKERCHIEFS.

THESE handkerchiefs are composed of two sheets of fine tissue paper interleaved with a very thin layer of absorbent wool which has been scented with oil of pine. They are very soft and pliable and can imbibe a considerable amount of moisture before becoming limp. They are intended to be destroyed when no longer serviceable and in this respect have an obvious sanitary advantage over cambric handkerchiefs in cases of pulmonary disease or when there is ulceration of the lips, nose, or mouth. They measure about 14 by 16 inches and may be obtained from Mr. Clement A. Graham, 55, Leigham Court-road, Streatham Hill, London, S.W.

CAUSES OF THROAT AND CHEST CATARRH IN CHILDREN.

To the Editor of THE LANCET.

SIR,—I am frequently coming across children suffering from throat and chest affections due to cold caught at school. I believe it is the custom in all schoolrooms in this town to keep the windows open all weathers. This is a crude and barbarous method of ventilating a schoolroom. About half the children who attend school appear to be always suffering from the effects of cold, having chronic rhinitis. About 15 months ago a patient of mine, a delicate boy, aged six years, had several severe colds on the chest in one winter while attending school. I discovered that he caught his colds at school and I ordered him to be kept at home the last winter. The result is most satisfactory; he has not once suffered in his health. One of his former attacks turned to croup and he was so ill one night that I was sent for and found him in a state of great exhaustion. No doubt the schools are responsible for many cases of adenoids.

Another fruitful source of these ailments is due to insufficient clothing and defective boots, not always on account of poverty. Some mothers imagine a boy of six is sufficiently clothed if he wears a thin jacket and pair of knicks of serge, with a shirt of flannelette beneath; the knees and legs are quite exposed. Half the children wear boots or shoes which are not waterproof; they are therefore worse off than barefooted children, because bare feet soon dry, but feet in waterlogged boots must be wet and cold until the boots are removed, by which time the blood is chilled and illness established. I hope other

practitioners who are interested in the welfare of our children will report cases of illness of all kinds which result from the conditions of school life. The amount of illness, hysteria, insanity, and crime which result from our present educational system is beyond calculation.

I am, Sir, yours faithfully,

H. H. TIDSWELL, M.R.C.S. Eng., L.R.C.P. Lond.

Torquay, March 19th, 1908.

MEDICAL MATTERS IN BASUTOLAND.

THE Colonial Office publishes the report of the principal medical officer, Mr. Edward C. Long, for the year 1906-07, during which period, he states, the people have shown an increasing inclination to utilise the Government hospitals and dispensaries. There were no epidemics of any importance and, with the exception of a small outbreak at a village in the Quthing district, the territory has been quite free from small-pox. There are references to an increase of leprosy in two districts. Efforts to ascertain the real extent to which the disease prevails have been made. On three occasions every leper who could be traced was examined and the case recorded. The first leprosy investigation was viewed with suspicion by the natives and doubtless many cases were concealed. The second count, made in 1902, was more successful and most of the cases were then under observation. In 1906 a third investigation was carried out and a special report thereon is in course of preparation. The numbers showed an increase over those observed in 1900 but the increase, after making allowance for cases which probably existed but were not observed on that occasion, was not sufficient to cause the disease to be regarded as a serious menace. The natives now fully realise its contagious nature and voluntarily segregate their lepers. The experiment of forming a leper colony, which is being tried by Chief Jonothan in the Leribe district, deserves encouragement. Mr. Long insists on the necessity of increasing the medical staff and the hospital accommodation of the colony. He also suggests that the time has arrived when the Basutoland Administration should have a public health department. Pending the organisation of such a department something might be done to make the Government reserves an object lesson in sanitary efficiency. Mr. Long adds: "I have lectured for the last two years on public health and sanitation to the native teachers at their vacation course. Unless the principles taught in these lectures are exemplified in practice and the practice enforced on the Government reserves we cannot look for much improvement in the habits of the people or the condition of their own villages."

COLOSSAL LIFE ASSURANCE FIGURES.

THE fifty-ninth annual report of the Prudential Assurance Company for the year ending Dec. 31st, 1907, states that the assets of the company are now over £68,000,000, of which sum in round figures £38,000,000 are assets of the ordinary branch and £30,000,000 are assets of the industrial branch. The total premiums received in the year amounted in round figures to over £11,000,000 and the claims of the year amounted to nearly £5,000,000. About £2,170,000 were also received in interest and rents. The expenses of management, commissions, and salaries amount to about £3,000,000, there being nearly 17,000 agents collecting weekly premiums. The total number of policies in force at the end of the year was 18,303,041. The directors regret the death of Dr. Robert Barnes who had been connected with the company from its foundation and had been a director for 23 years.

THE CAPSULOID COMPANY, LIMITED.

WE learn from our correspondents that the Capsuloid Company is now circularising medical men with the statement that many physicians have discovered the effect of "Capsuloids" upon the hair, the statement being meant to convey a suggestion that there are medical men who believe that the internal use of "Capsuloids" will prevent or remedy baldness. The last line of the circular respectfully calls the attention of the medical man to whom it is addressed to an analysis of "Capsuloids" which appeared in THE LANCET of August 11th, 1900. In this analysis we stated that a preparation which had been submitted to us contained a certain amount of iron in a certain form, and made no mention whatever of the possible use of "Capsuloids" in the treatment of baldness. The Capsuloid Company, Limited, however, diffused advertisements widely the significance of which could only be that we had recommended "Capsuloids" for the treatment of baldness. The circular on which we are commenting, though carefully worded so as to escape protest, is intended to create the old false impression. The company is not one that any medical man should have any dealings with.

W.—We can hardly believe that any dentist ever gave such advice. It is dangerous not to remove false teeth on going to bed, while it is also insanitary and dirty.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

During the week marked copies of the following newspapers have been received:—*The Court Journal, Portsmouth Evening News, Lancashire Post, Daily Chronicle, Daily Mirror, Daily Graphic, Western Chronicle, Hereford Times, Wimbledon Gazette, Motor Car Journal, Liverpool Daily Post, Liverpool Daily Courier, Cardiff Times, Ely Gazette, Alnwick Express, St. James's Budget, Christchurch Times, Scientific American, Literary Digest (New York), Broad Arrow, Coventry Times, Edinburgh Evening News, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (31st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (1st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

THURSDAY (2nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.)

FRIDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.).

SATURDAY (4th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

FRIDAY.

LARYNGOLOGICAL SECTION (Hon. Secretaries—W. Jobson Horne, H. S. Barwell): at 5 P.M.

Cases and Specimens:

Dr. Jas. Donelan: (1) Case of marked Nasal Obstruction resulting from Neglected Adenoids; (2) Case of Nasal Obstruction with Deflected Septum.

Dr. StClair Thomson: Two Radiographs illustrating Value of X Rays in Sounding and Washing out the Frontal Sinus.

Dr. Scanes Spicer: Case of Intrinsic Neoplasm of Left Vocal Cord.

Dr. Dundas Grant: (1) Case of Thyro-lingual Fistula treated by Electrolysis and Excision; (2) Case of Chronic Frontal Sinusitis treated by Irrigation.

N.B.—Fellows of the Society are entitled to attend and speak at all Meetings.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Clinical Meeting.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY.—4.15 p.m., Discussion: (1) Does Chloroform Administration tend to the Production of Post-partum Hæmorrhage (opened by Dr. Bowie); (2) Anæsthetics in General Practice (opened by Mr. H. Wallace).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Sir James Sawyer: Points of Practice in Maladies of the Heart. (Lumleian Lectures).

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. S. E. Dore: Clinique (Skin). 5.15 P.M. Lecture:—Dr. C. O. Hawthorne: The Clinical Anatomy and Physiology of the Nervous System.

TUESDAY.—4 P.M., Dr. C. T. Williams: Clinique (Medical). 5.15 P.M., Lecture:—Mr. H. Curtis: Some Interesting Cases of Cranial Surgery.

WEDNESDAY.—4 P.M., Mr. C. Ryall: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. C. O. Hawthorne: The Clinical Anatomy and Physiology of the Nervous System.
THURSDAY.—4 P.M., Mr. Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. G. Barling (Birmingham): The Diagnosis and Treatment of Renal Mobility.
FRIDAY.—4 P.M., Mr. W. Dodd: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—12 noon, Lecture:—Dr. Low: Pathological. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M., Operations.
TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12 noon: Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. Ll. Williams: When to Extract—(1) Caries, Septic Condition; (2) Overcrowding, Malocclusion; (3) Instruments and Methods.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eye. 2.30 P.M., Operations. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.
THURSDAY.—12 noon, Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eye. 2.30 P.M., Operations.
FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. K. Scott: Diseases of the Eye. 2.30 P.M., Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Cliniques:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Throat, Nose, and Ear (Mr. H. W. Carson); X Ray (Dr. A. H. Pirie). 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).
TUESDAY.—Clinique:—10.30 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Surgical Operations (Mr. Carson). Cliniques:—Surgical Out-patient (Mr. Edmunds); Gynæcological (Dr. A. E. Giles). 4.30 P.M., Lecture: Dr. A. E. Giles: Pelvic Displacements.
WEDNESDAY.—Cliniques:—2.30 P.M., Medical Out-patient (Dr. Whipham); Dermatological (Dr. G. N. Meachen); Ophthalmological (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations. (Dr. Giles). Cliniques:—Medical Out-patient (Dr. Whiting); Surgical Out-patient (Mr. Carson); X Ray (Dr. Pirie). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Throat Operations (Mr. H. W. Carson).
FRIDAY.—10 A.M., Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld); Eye (Mr. Brooks). 3 P.M., Medical In-patient (Dr. M. Leslie); Demonstration of Cases of the Infectious Fevers (at the North-Eastern Fever Hospital, St. Ann's-road, N.): Dr. F. Thomson.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2.15 P.M., Sir Dyce Duckworth: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. W. Turner: Surgery. 4 P.M., Dr. StClair Thomson: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
TUESDAY.—2.15 P.M., Dr. R. T. Hewlett: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Dr. Hewlett: Infections of the Digestive Tract and their Significance.
WEDNESDAY.—2.15 P.M., Dr. F. Taylor: Medicine. 2.30 P.M., Operations. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.
THURSDAY.—2.15 P.M., Dr. G. Rankin: Medicine. 2.30 P.M., Operations. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Mr. M. Davidson: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
FRIDAY.—2.15 P.M., Dr. R. Bradford: Medicine. 2.30 P.M., Operations. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
SATURDAY.—2.30 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle street, Piccadilly, W.

FRIDAY.—9 P.M., The Right Hon. Lord Montagu of Beaulieu: The Modern Motor Car.

INCORPORATED INSTITUTE OF HYGIENE (MIDLAND COUNTIES BRANCH), Medical Theatre, Birmingham University.

MONDAY.—8 P.M., Dr. J. C. Thresh: The Milk Problem.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 26th, 1908.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Mar. 20	29 85	N.E.	...	72	42	31	31	32	Fine
,, 21	29 96	S.W.	...	91	49	32	37	39	Overcast
,, 22	29·63	S.W.	...	67	47	38	44	46	Cloudy
,, 23	29 79	W.	0·11	85	54	41	44	45	Cloudy
,, 24	30·09	S.W.	...	96	58	41	42	44	Hazy
,, 25	29 97	E.	0·03	54	48	44	45	46	Raining
,, 26	30 02	N.	0·69	45	43	42	42	42	Raining

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